



Whatever may be the theory adopted as to etiology of phthisis, it is certain that the negroes suffer very largely from it, and it is interesting to observe that while in the North the white population of all classes are largely the victims of phthisis, the white people in the South are measurably exempt.*

THE CONFEDERATE STATES MEDICAL AND SURGICAL JOURNAL.

As complete sets of this publication are becoming quite rare, we have thought it well to put on record, as a matter of interest to ex-Confederate medical officers, and those book collectors who may not know the state this work was left in at the close of the war, some items we have collected.

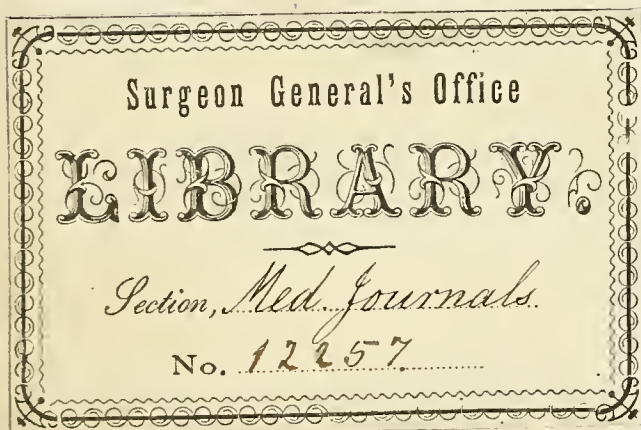
The first number was issued in January, 1864, and the last in February, 1865. The following letter from Prof. Middleton Michel, of Charleston, supplies us with the narrative of the last days of the *Journal*:

CHARLESTON, February 10th, 1883.

DR. THOMAS F. WOOD:—*My Dear Doctor*:—The January and February numbers of our Confederate States *Medical and Surgical Journal* for 1865, were, indeed, the only ones ever issued. The March number, however, was printed and ready for issue when all was burnt up in the Richmond conflagration!

By the way, the March number contained a long report of mine on the introduction of Yellow Fever into Wilmington and Smithville, which I had read before the Association of Army and Navy Surgeons, and which was ordered to be published. I actually printed a part of the article myself, setting up the type with the aid of a one-armed soldier, who was the only available assistant or

*This opinion does not agree with that given by M. Ruz: (*Étude de la phthisie à la Martinique*). His statistical tables show, that the white creoles offer the greatest contingent of deaths from tubercular disease, and next to them mulatto women, for in this latter class is found the most complete assemblage, of the vices of idleness, Bouchardat's "*Traité d'Hygiène Publique et Privée*, etc., Paris, Germer Baillière et cie, 1831.



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CIRCULAR.

SURGEON GENERAL'S OFFICE,
Richmond, Oct. 31, 1863.

The following Prospectus meets with the hearty approval of the Surgeon General, and the medical officers of the Confederate States service are earnestly requested to co-operate in the undertaking, and to forward their names, enclosing subscriptions, with as little delay as practicable.

S. P. MOORE,
Surgeon General.

Received of the Surgeon General's Office, Oct. 31, 1863.

printer in Ayre's office in Richmond, at the time. I distinctly recall the pleasure I took, in those hours of political despair, in diverting my mind in its moments of leisure, by collating, and transcribing my MSS. notes taken while on this official duty in your city; writing my article; learning to set type; and in actually printing part of my own essay.

Truly yours,

MICHEL.

This *Journal* was well edited, and printed on very good paper for the times. It was the size of the present form of *Boston Medical and Surgical Journal*. It was issued monthly, the first year at \$10 a year, the second at \$20.

Of the papers especially interesting to us, were those by Dr. Wm. T. Wragg, of Charleston, on the Yellow Fever Epidemic of Wilmington, in 1862. This paper was reprinted since the war in the *New York Medical Journal*. Dr. Will. Geo. Thomas, of Wilmington, replied to it, and his paper was answered by Dr. E. A. Anderson, of Wilmington.

At this early day, carbolic acid was making its way into public notice, but there was great confusion in the medical mind as to its proper chemical position.

Perhaps the most interesting chapter in the medical history of the Confederacy found in these old Journals, is the part which indigenous remedies played. Notwithstanding there was a strong effort made by the Surgeon-General to bring our native plants into use, certainly in the field, very few of them were used.

Pinckneya pubens made a hard struggle for the therapeutical position its botanical relation suggested. The application of oil of turpentine upon a girdle of flannel during the cold stage of fever had also a short period of claimed success. But nothing could supplant quinine notwithstanding its reputed scarcity.

We are glad to be able to rescue these old journals from oblivion.

We regret to be called upon to record the death of Dr. GEORGE M. BEARD, in his 44th year. He was one of the most energetic and voluminous writers in his specialty.

CONFEDERATE STATES MEDICAL AND SURGICAL JOURNAL,

PUBLISHED UNDER THE AUSPICES OF THE SURGEON GENERAL.

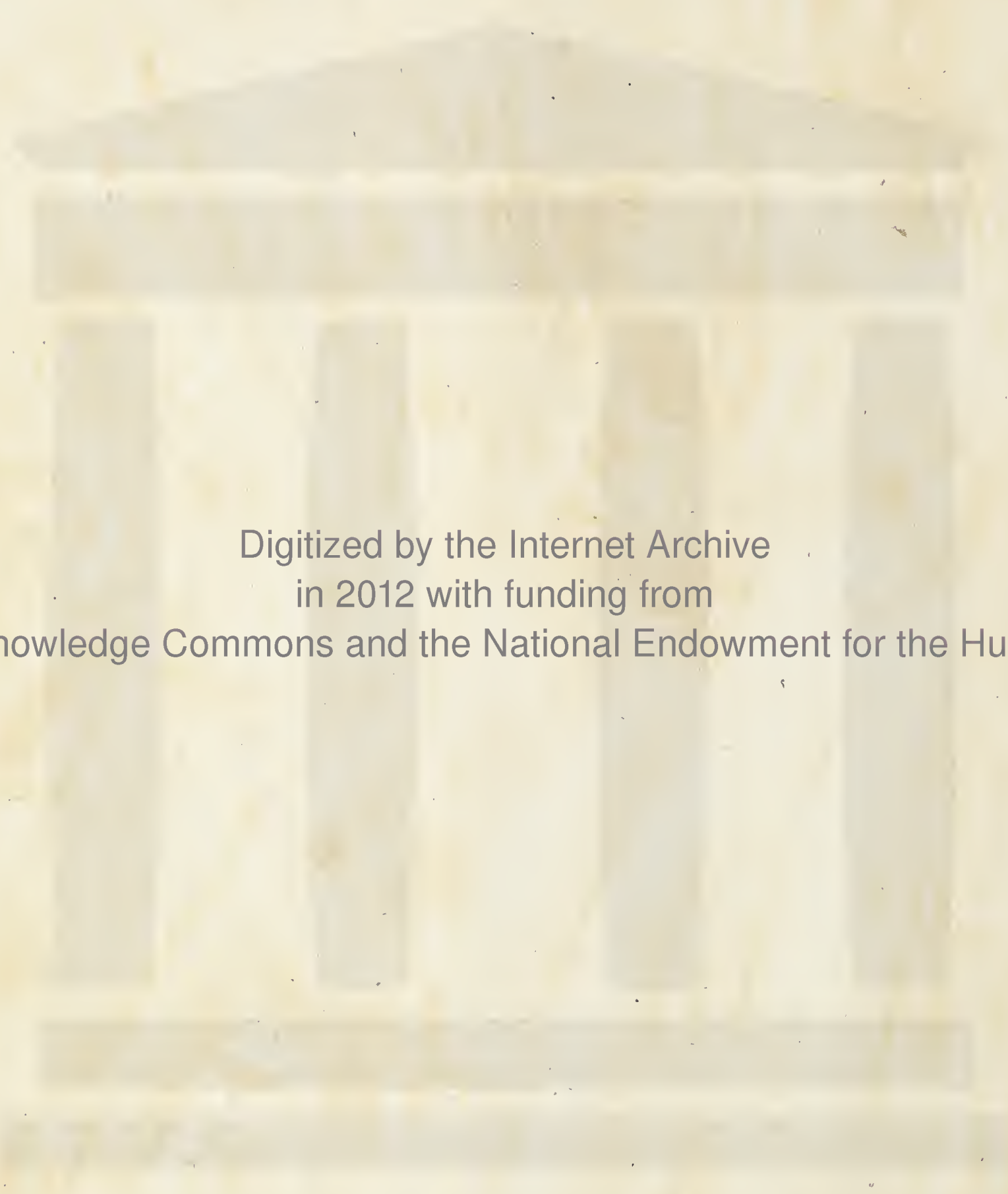
PROSPECTUS.

It is proposed to commence the publication of a medical periodical in this city on the 1st of January next, and the co-operation of the army and navy medical staff and of the profession at large is respectfully solicited.

The responsible position which the southern medical profession holds before the country, demands that there should be some exponent of its unprecedented efforts under the most adverse circumstances, during this war. Having free access to the reports and archives of the Medical department, and acting in concert with the Association of army and navy surgeons, this journal purposes to be the impartial representative of the profession, by collecting and elaborating the valuable results of its labors. Through this medium also, we can be brought into communication with our brethren in other countries, and a chronicle of medical science, carefully collated from recent English and Continental periodicals will be a leading feature. In short, no effort will be spared by its conductors to lay the foundation of a Southern medical literature on a firm and enduring basis.

The CONFEDERATE STATES MEDICAL AND SURGICAL JOURNAL will be published weekly, in octavo form, and issued regularly to subscribers, who have paid in advance, at *ten dollars* a year.

All persons who favor the enterprise, whether in or out of the army, are requested to act as agents; and subscribers will send in their names and subscriptions as rapidly as possible, to Assistant Surgeon T.S. Latimer, care of Surgeon General, as the size of the edition must be ascertained, and an ample supply of paper secured prior to January 1st, 1864.



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CONFEDERATE STATES



JOURNAL.

Vol. I.

RICHMOND, JANUARY, 1864.

No. 1.

ORIGINAL COMMUNICATIONS.

ART. I.—*Traumatic Tetanus.* By Prof. Jos. JONES, *Surg. P. A. C. S.*

[In selecting for publication in this number the following extracts from a carefully and elaborately prepared paper now on file in the office of the Surgeon-General of the Confederate States, concerning the nature, history, pathology and treatment of traumatic tetanus, it is due to the author, Surg. Jos. Jones, P. A. C. S., to say that we hope to publish the entire article at some future day; in the meantime, our readers must be content with only such portions as we think have a practical bearing on the treatment of this interesting, but usually fatal malady.—ED.]

History of the case; Symptoms, &c.

Confederate General Hospital, Augusta, Ga., July, 1862. Gillstrap, a Confederate soldier; age 37; dark complexion; dark hair and eyes; weight 145 pounds; height five feet six inches; athletic and strong in health; muscles well developed; has been in the service of his country six months; previous to this time his occupation was farming.

At the battle of Secessionville, on James' Island, S. C., June 16th, 1862, whilst standing in a small house, and in the act of taking a cartridge from the box, a Minnie ball passed through a plank in the side of the house, three inches in thickness, and entering the lower part of the anterior fleshy portion of the right fore-arm, passed through the extensor and flexor muscles between the ulna and radius, splintering both bones, without, however, fracturing them across.

The wound suppurated freely, and appeared to be doing well, until July 6th, when the suppuration was sensibly diminished, and the patient complained of spasmodic twitchings and painful sensations in the muscles of the wounded arm and corresponding side, and along the spine, especially between the shoulders and in the region of the cervical and brachial plexus; stiffness and uneasiness about the muscles of the jaws, and painful sense and tightness about the ensiform cartilage; torpor of the bowels, and loss of rest at night. The spasmodic contractions and twitchings of the muscles of the wounded arm were excited and increased by the slightest movements, and were especially aggravated by coughing, which was not only attended with great pain, but also with spasmodic contractions of the muscles of the thorax and neck. For several days previous the bowels have been constipated; and in like manner with this characteristic symptom, the

sense of oppression of breathing, restlessness and loss of sleep, preceded the well marked symptoms of tetanus. The expression of the countenance is that of distress, and even of pain, and the muscles of the face are greatly distorted during the paroxysms.

During the night and following day, (July 7th,) the pain in the arm and between the shoulders and at the præcordium increased, and in like manner the stiffness of the jaws; the tetanic spasms became more violent and frequent; opisthotonos became more marked, and the disturbance of respiration was progressively increased during the paroxysms. Administered in the morning ten grains of calomel, and followed with half a fluid ounce of castor oil in four hours; these purgatives failed to move the bowels. At bed-time administered forty drops of tincture of opium, and as this dose failed to produce sleep, thirty drops more were administered two hours afterwards. After the second dose the patient rested somewhat better, the spasms appeared to be slightly moderated, and he slept a little between the severe spasms.

July 8th, 12 o'clock M.—Says that he feels a little better; just now the spasms do not appear to be so violent; pulse 82, soft and full; respiration quiet and regular between the paroxysms; disturbed and almost entirely arrested during the spasms.

Temperature of hand, $37^{\circ} 6\text{ C.}$, ($99^{\circ} 7\text{ F.}$)

" of axilla, $37^{\circ} 9\text{ C.}$, ($100^{\circ} 3\text{ F.}$)

Examination of Urine.—High color, and scanty; amount excreted during sixteen hours, (from July 7th, 8 P. M., to July 8th, 12 M., 4823 grains (Troy); if from this data the amount of urine be calculated for twenty-four hours, it would equal 7234.32 grains. Specific gravity, 1021.55. Reaction strongly acid; color very deep orange, inclining to red. No deposit after standing more than twenty-four hours; a deposit

Analysis of Urine, No. 1, July 7th, to July 8th.	Urine passed during 16 hours, July 7th, 8 P. M., to July 8th, 12 M.	Amount and Composition of Urine calculated for 24 hours.	Average Amount and Composition of Urine passed each hour.
	Grains.	Grains.	Grains.
Amount of urine.....	4823 00	7234 32	301.43
Water.....	4544 26	6816.24	284.01
Solids.....	278 74	418.08	17.42
Urea.....	145.60	218.40	9.10
Uric acid.....	3 73	5.52	0.23
Free acid.....	9 26	13 68	0.57
Phosphoric acid.....	10.89	16.32	0.68
Sulphuric acid.....	7 61	11 28	0.47
Chlorine.....	21.13	31.68	1.32
Equivalent of chloride of sodium.....	34.67	51.84	2.16
Fixed saline constituents:			
Entire saline constituents..	67.49	101.04	4.21
Phosphates of lime and magnesia.....	8.76	12.96	0.54
Sulphates, phosphates and chlorides of alkalies.....	58 73	88.08	3.67

fell, however, after standing a longer period, consisting chiefly of the phosphates; a dense white layer, resembling cream in appearance, also rose, and completely coated the surface to the

depth of one-eighth of an inch. This was composed of phosphates of lime, magnesia and ammonia, amorphous granules, stellate and prismatic crystals, and vegetable cells. I have seen a similar thick scum rise on the urine of typhoid fever after standing, but never upon the urine of malarial fever.

Upon consultation with my valued and honored friend, Surgeon L. D. Ford, it was determined to try the effects of quinia, and of chloroform and sulphuric ether internally.

Ordered sulphate of quinia; grains v, at 12 M., 2 P. M., 4 P. M., 6 P. M.

Ordered chloroform, drachms iv; sulphuric ether, drachms iv; tincture of opium, drachms iv; mix.

Administered 10 drops of this mixture every hour in sweetened water.

Nine o'clock, P. M., pulse 88; bowels still unmoved. Has taken twenty grains of quinine; does not complain of any unpleasant sensations in head from the action of this. The chloroform mixture has been administered continually each hour, and the patient thinks that it has had the effect of somewhat diminishing the pain and the severity of the spasms. I administered forty drops of laudanum, and ordered this dose to be repeated in two hours; and the chloroform mixture to be continued, ten drops every hour.

July 9th, 12 M.—Continues much the same; pulse 74; skin in a profuse perspiration and feels cool; tongue coated with white fur. The chloroform mixture appears to have slightly diminished the intensity of the spasms; they are, however, very severe and frequent, and his sufferings very great.

Temperature of hand, $37^{\circ} 55\text{ C.}$, ($99^{\circ} 6\text{ F.}$)

" of axilla, $37^{\circ} 85\text{ C.}$, ($100^{\circ} 2\text{ F.}$)

Continue chloroform mixture; diet, chicken and beef soup, corn gruel and milk punch. His nourishment, as well as his medicine, is taken with great difficulty, and it is only when there is an intermission of the paroxysms, that he is able to suck them carefully through a quill.

Nine o'clock, P. M.—No improvement of symptoms. Continue chloroform mixture; ten drops every hour. Administered now ten grains blue mass; and at 5 A. M., 8 A. M., and 11 A. M., to-morrow morning give five grains quinine; in all fifteen grains.

July 10th, 12 o'clock, M.—Tetanic spasms have increased in frequency and violence; trismus increasing in violence. Bowels obstinately constipated; the blue mass and castor oil have had no effect. Fifteen grains of quinine have been taken this morning without any evident effect.

Nine o'clock, P. M.—No improvement. Administered an enema of molasses, common salt and water; this in like manner with the purgatives, failed to produce any action on the bowels. After the trial with the enema, administered thirty drops of laudanum, and ordered this dose to be repeated in two hours. Ordered to continue chloroform mixture, and in the morning administer five grains of quinine at 5 A. M., 7 A. M. and 11 A. M.

July 11th, 12 M.—Continues to grow worse; bowels still without any movement; has taken fifteen grains of quinine

this morning; pulse 84; respiration 15. Ordered chloroform mixture.

Examination of Urine.—Light red color. After standing forty-eight hours, notwithstanding the heat of the weather, the reaction was strongly acid. No deposit fell during this time. After standing for a still longer time, however, a deposit of the phosphates was thrown down, and a thick cream like scum formed upon its surface one-fourth of an inch in thickness. The urine emitted a distinct smell of chloroform. Sp. gr. 1024.75.

Analysis of Urine, No. 4, July 10th, 12 M., to July 11th, 12 M.	Urine passed during 24 hours, from July 10th, 12 M., to July 11th, 12 M.	Average Amount and Composition of Urine passed each hour.
	Grains.	Grains.
Amount of urine.....	6457 50	269 06
Water	6185 20	253 56
Solids	372 30	15 50
Urea.....	302 62	12 60
Uric acid.....	5 40	0 22
Free acid.....	21 60	0 90
Phosphoric acid	16 94	0 70
Sulphuric acid.....	15 56	0 64
Chlorine.....	10 59	0 42
Equivalent of chlorine of sodium.....	17 37	0 72
Fixed saline constituents:		
Entire saline constituents..	Not determined	Not determined.
Phosphates of lime and magnesia.....	10 39	0 42
Sulphates, chlorides and phosphates of alkalies...	Not determined.	Not determined.

Nine o'clock, P. M.—The tetanic spasms have greatly increased in violence and frequency. Since 2 P. M. emits a shrill, piercing cry during the spasms, and the head and neck are drawn back and downwards towards the heels, whilst the lower extremities are drawn in like manner backwards and upwards towards the head, with great violence. The patient cannot lie down, even in the intermission of the spasms, and is compelled to sit upon the edge of the bed, his lower extremities being forcibly bent backwards under the bed, whilst the neck and head are bent backwards over the bed. The jaws are very rigid; it is impossible even, during the most complete remissions, to protrude the tongue; and it is only by the greatest care, and by a careful selection of the more complete remissions, that he is able to take his chloroform mixture, and a little nourishment. Complains of great pain and "drawing" in the muscles between the shoulders, in the neck, (and in the region of the diaphragm.) The wound in the arm looks dry and bluish and purplish red, and has ceased to discharge pus; the discharge now consisting of a small quantity of serous fluid. Tincture of iodine was poured into the wound, and the fore-arm was also painted with it. The application of the tincture of iodine, directly to the wound, appeared to increase the spasms. Immediately after, the patient had several terrible spasms, during which he emitted most sharp and piercing cries. Has passed no urine since 12 M., and says that he is unable to do so.

I administered thirty drops of laudanum, together with thirty drops of the mixture of chloroform, ether and lauda-

num, and directed a repetition of this dose in two hours, together with the hourly administration of fifteen drops of the chloroform mixture; and in the morning five grains of quinine at 5 A. M., 7 A. M. and 9 A. M.

July 12th, 12 M.—Spasms not so violent as yesterday; appears to have been benefitted by the increased dose of the chloroform mixture. Pulse, respiration and temperature continue much the same. Pulse 84 per minute; intermittent during the spasms.

Has taken fifteen grains of quinine this morning. Thus far I have observed no beneficial effects whatever from the quinine. On several occasions it has even appeared to aggravate the spasms, whilst on the other hand improvement always appears to follow the free use of the chloroform mixture. Administered thirty drops of laudanum and thirty drops of the chloroform mixture, and repeated this dose half an hour after, and ordered the continuance of fifteen drops of the mixture each hour.

Nine o'clock, P. M.—There appears to be a slight improvement of symptoms; pulse 88. Has passed no urine this day since 12 M. Bowels still obstinately constipated.

Painted the entire arm with tincture of iodine, and poured the tincture into the wound. This caused some pain and an increase of the spasms. Administered forty drops of laudanum, with thirty drops of the chloroform mixture, and ordered this dose to be repeated in two hours, and also the continuance of the mixture; fifteen drops each hour.

July 13th, 11 A. M.—Appears somewhat easier. The second dose of laudanum and chloroform mixture, administered last night, induced some rest, and he slept two hours. The tetanic spasms appear to have lessened a little in severity, and the wound is commencing to suppurate.

Administered thirty drops of laudanum and thirty drops of chloroform mixture, and ordered the chloroform mixture to be continued in the usual dose, and also five grains of quinine at 12 M., 2 P. M. and 4 P. M.

Nine o'clock, P. M.—Has passed more urine than usual this day. His symptoms have changed for the worse—the paroxysms are more violent and the sufferings more acute—cries out in each spasm.

Twenty-five drops of laudanum, with an equal number of the chloroform mixture, were administered; and as they appeared not to afford any special relief, the dose was repeated at the end of half an hour. The continuance of the chloroform mixture as usual, together with five grains of quinine, at 5 A. M., 7 A. M. and 9 A. M., were ordered.

July 14th, 11 A. M.—Did not rest during the night. Has taken fifteen grains of quinine this morning. Ordered Epsom salts, one ounce; water, six ounces; mix and administer at once. Ordered chloroform, gum camphor, laudanum, sweet oil, four drachms each; dissolve the camphor in the chloroform, and then mix with the laudanum and sweet oil. Use this as a liniment to the muscles of the back. Continue the application of tincture of iodine to the wound, and also rub the entire arm with iodine ointment, and apply a plaster of iodine ointment over the wound.

Nine o'clock, P. M.—Through mistake the nurse failed to administer the chloroform mixture, and the patient has suffered much this day. The Epsom salts failed to exert any effect upon the bowels. The chloroform liniment afforded some slight relief of the pain between the shoulders.

Ordered Epsom salts, one ounce; water, six ounces; mix and administer now. Ordered laudanum, m. xl; chloroform mixture, m. xl; sweetened water, one ounce; mix and administer in half an hour. Continue chloroform mixture and liniment.

July 15th, 12 M.—More comfortable; spasms not so violent, and appear to be diminishing both in frequency and force. Pulse 84; regular. Respiration in the remissions regular. Temperature of the extremities and trunk quite uniform, and about the same as last recorded. Says that he obtained some rest last night. Administered thirty drops of laudanum, and the same number of the chloroform mixture, and ordered the mixture continued as before.

July 16th, 10 A. M.—Much better; spasms much less severe; jaws are much more relaxed, and he is able to talk with more ease. Pulse 86; respiration 18. Ordered to paint arm with tincture of iodine, and continue chloroform mixture.

Nine o'clock, P. M.—Pulse 100, in sitting posture, and intermittent after the severe spasms. Twenty-five drops of laudanum and an equal number of chloroform mixture, with one ounce of brandy properly diluted, were administered with good effect; and this dose repeated in half an hour, resulted in the best night's rest since the onset of the disease.

Ordered enema of salt and molasses now, and if without effect, repeat in the morning.

July 17th, 10 A. M.—Continues to improve; rested much better during the night than at any previous time. The spasms continue to diminish in frequency and force. Pulse in sitting posture 82, full, soft and good; tongue coated with light white fur. Continue chloroform mixture.

Nine o'clock, P. M.—Suffering somewhat more this evening. Ordered brandy, two ounces; laudanum, one ounce; chloroform, m. xxx; sweetened water, six ounces; mix; and divide into two parts; one to be taken now, and the other at the end of one hour. Continue the chloroform mixture.

July 18th, 11 A. M.—Much better; says that he feels like a new man; rested well during the night; the expression of his countenance has greatly improved; pulse 80; respiration 14; temperature as in previous observations. Twenty drops of laudanum, with an equal quantity of chloroform, were administered, and this dose was repeated at the end of one hour. Continue chloroform mixture.

(He continued thus steadily to improve, taking regularly the chloroform mixture, and occasionally castor oil, when indicated; which latter, assisted by enemata of molasses, salt and water, happily succeeded in producing on the 21st the first real evacuations from the bowels since the 6th of July—Ed.)

July 22d, 9 P. M.—Pulse 80; has had a few light spasms, but upon the whole has been quite comfortable. The muscles of the jaw have greatly relaxed as the other symptoms

improved, and he can now open his mouth with considerable ease.

Administered thirty drops each of laudanum and chloroform, with one fluid ounce of brandy, properly diluted, and ordered an ounce of salt and molasses for the morning. Continue chloroform mixture.

July 23d, 12 M.—Much better; has had no general spasms, only slight twitchings of the muscles of the arms; rested well during the night; pulse 80. Ordered enema of molasses and salt. Continue chloroform mixture.

9 o'clock, P. M.—Says that he does not feel as well this morning; pulse 90, full and strong; surface feels a little warmer than usual. The enema this morning produced an evacuation of hard balls.

Ordered Dover's powder, ten grains, now, and repeat in two hours, if rest is not produced. Continue brandy, wineglass full every two or three hours, also the chloroform mixture, and in the morning repeat the enema.

July 24th.—Says that he feels better; having taken both Dover's powders, rested well during the night. The enema has been retained, and has not yet acted; says that he feels an inclination to evacuate the bowels; pulse 76.

Temperature of hand, 37° 6 C., (99° 8 F.)

“ of axilla, 38° 4 C., (101° 2 F.)

This is the first morning that the patient has complained of the sensation of hunger. Examined the wound carefully with a probe, and extracted from the orifice upon the internal surface, at which the ball entered, a flat piece of lead about one-fourth of an inch in diameter, the edge of which had come in contact with the radius, and was curled over, having evidently impinged against the bone; for small fragments of bone were impacted in the lead. This particle of lead was most probably detached from the ball during its passage through the thick plank; the remainder of the ball, as before stated, passed entirely through the fore-arm between the radius and the ulna. This fragment of the ball was surrounded by a thick fibrous capsule. The edges and sides of the wound upon both surfaces, the internal and external (points of entrance and exit to the ball), were much thickened and hardened, and the bones along the track of the ball have evidently been injured. Owing to the severe spasms which attempts at even slight examinations induced, a thorough examination of the wound was not made until this time. The examination with the probe was not made when the patient first entered the hospital, for he had been wounded several days, and the wound appeared to be doing as well as usual, in the most favorable cases. I made incisions upon both surfaces through the thickened tissues, and introduced a tent, smeared with basilicon ointment, for near one inch, in the track of the wound; painted the surrounding parts with tincture of iodine, and ordered the fore-arm to be rubbed with the following liniment: Chloroform, one ounce; gum camphor, four drachms; laudanum, four drachms; sweet oil, three ounces; dissolve the camphor in the chloroform and mix well with the other ingredients. Has taken no chloro-

form since 3 A. M. this morning. Ordered the chloroform mixture stopped.

July 25th, 12 M.—Last evening at 8 P. M., says that he had a "very bad turn;" felt as if he was all drawn up and stiff, and unable to breathe; and the muscles of the arm, back and body generally were spasmed. The return of the spasms appeared to be due to the sudden discontinuance of the chloroform mixture. The chloroform mixture was recommenced immediately after the spasm; forty drops of this, with forty drops of laudanum, produced some relief, and he fell asleep about midnight. This day he is quite comfortable; pulse 76. The wound does not look so well; suppuration is somewhat diminished; urine light-colored, with heavy deposit.

Ordered to continue chloroform mixture, fifteen drops every hour, and administer now an enema of salt, molasses and turpentine. The patient has been taking brandy frequently during the attack, averaging about eight ounces each day.

9 o'clock P. M.—The chloroform mixture has produced good results.

Ordered calomel, grains xii; follow with castor oil, one ounce, in the morning. Continue the brandy and chloroform mixture.

July 26th, 12 M.—The calomel and oil produced the desired effect, and are still acting; says that he feels much better. The daily introduction of a tent, smeared with basilicon ointment, into the wound, has produced good results, causing a profuse suppuration, and the evacuation of a deep-seated abscess between the wound and the elbow joint. This morning this deep-seated abscess discharged suddenly through the wound several fluid ounces of pus, to the great relief of the patient. After this the swollen parts of the fore-arm below the elbow were sensibly reduced in size.

Nine o'clock, P. M.—Has been taking only ten drops of chloroform mixture each hour during the day, and has intermitted several times, so that not more than sixty drops have been administered. The pains and contractions and spasms of the muscles of the arm and legs and back have commenced again; the diminution of the chloroform has been attended by a return of the paroxysms. The symptoms, however, are very mild, and for the first time since his attack he has been able to stand on his feet, and to walk across the ward, supported on either side by assistants. Pulse 76. The purgative last administered has acted nine times. Thirty drops each of laudanum and chloroform, with one fluid ounce of brandy, were administered, and the chloroform mixture ordered regularly—ten drops each hour.

July 27th, 10 A. M.—Rested well after midnight; all his symptoms better; pulse 76; urine light colored.

Ordered to continue chloroform mixture, ten drops each hour.

July 28th, 12 M.—Continues to improve; the swelling in the arm has almost entirely subsided; says that he feels quite well, with the exception of stiffness in the muscles and some pain between the shoulders, and is hungry all the time. Pulse 84; bowels readily acted on by the medicine.

P. M.—Continues quite comfortable; complains only of a

slight cough and pain in the muscles of the back—most probably the result of the severe tension of the muscles during the previous spasms.

July 29th.—Continues to improve and walks about the ward.

July 30th.—Continues to gain strength; wound looks well and is rapidly healing. Amount of urine excreted from July 28th, 12 M., to July 30th, 12 M., (forty-eight hours,) grains, 51206.70; specific gravity, 1016. Natural yellow color.

P. M.—Has taken no chloroform this day; nothing but brandy. Has experienced no ill effects from the change. Temperature of axilla, 40° 2 C., (104° 4 F.)

July 31st.—Walks about; says that he feels perfectly well; tongue clean; urine normal in appearance; has taken no chloroform during the last two days; takes nothing but a tablespoonful of brandy every three or four hours.

August 1st, 12 M.—Appears to be entirely restored. The improvement of the arm has been very rapid; the symptoms of irritation, inflammation and swelling have almost entirely disappeared, and the wound is nearly closed. Takes no medicine except a little brandy punch occasionally. Bowels moved regularly each day; pulse 84; respiration 20. The intermittent action of the pulse has disappeared entirely with the disappearance of the spasms. Urine normal in color; specific gravity, 1013.

Analysis of Urine, No. 17, passed July 31st, 12 M., to August 1st, 12 M., (24 hours.)	Amount and Constituents of Urine passed during 24 hours, July 31st, 12 M., to August 1st, 12 M.	Average Amount and Composition of Urine passed each hour.
	Grains.	Grains.
Amount of urine.....	28060.10	1169.07
Water.....	27190.53	1132.84
Solids.....	869.57	36.23
Urea.....	543.48	22.64
Uric acid.....	11.46	0.47
Free acid.....	.....	.....
Phosphoric acid.....	15.98	0.66
Sulphuric acid.....	20.62	0.85
{ Chlorine.....	120.30	5.01
{ Equivalent of chloride of sodium.....	197.47	8.22
Fixed saline constituents:		
{ Entire saline constituents....	296.72	12.34
{ Phosphates of lime and magnesia.....	18.64	0.77
{ Sulphates, phosphates and chlorides of alkalies.....	278.08	11.58

This patient continues to gain strength; the wound healed up; and he was sent home on a furlough ten days after this observation.

ART. II.—*Resections of the Hip-Joint.* By JAMES B. READ, Surg. P. A. C. S.

James M. Jarrett, lieutenant company "C," 15th N. C., a native of North Carolina, 28 years of age; fair complexion; medium size and spare habit; general health good; of temperate habits; occupation, before the war, an upholsterer;

entered general hospital No. 4, Richmond, Va., October 20th, 1863; at the affair at Bristow, October 14th, was wounded by a Minie ball, entering in front and rather to the outside of the median line of the left thigh, about two inches below Poupart's ligament, fracturing and comminuting the femur, and making its exit on the outer and lower side of the limb, rather higher than the point of entrance. A straight splint had been applied to the limb, and he had been transported one hundred and sixty miles over a rough country road in an ambulance. He was much exhausted when received in the hospital, and complained of great pain on any movement.

Bandages and splints were at once removed, and the thigh placed comfortably on pillows. The limb was swollen and red, both orifices discharging bloody pus. Chloroform had to be administered before he would permit the dressing to be changed. Wet dressings were applied to the thigh and an opiate administered.

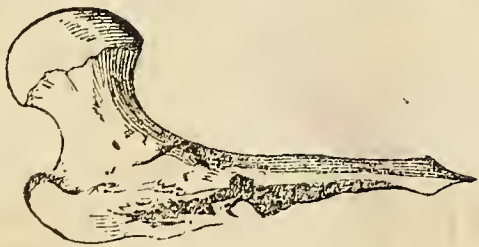
The case from this time progressed unfavorably. He gradually lost flesh; the pulse became quick and small; the tongue dry and red; and there was a tendency to run off by the bowels.

The discharges from the wounds purulent and bloody, mixed with bubbles of offensive gas; occasionally small pieces of bone came away; night sweats were of frequent occurrence.

Nov. 9th.—Jarrett's condition growing gradually worse, a consultation was asked for, and surgeons C. B. Gibson and M. Michel saw the patient with me. After a careful examination of the case, it was determined that it was one that called for operative interference as the best chance for recovery. The patient was cheerful, and desired to be relieved from the agony which he endured on the slightest movement.

4 P. M.—Chloroform having been previously administered, being placed on the table on his right side, a straight incision was made about two inches below the point of exit, and carried through this over the trochanter major two inches, making a wound of about seven inches in length; the lower end of the femur was now examined, and was found pointed and jagged, with a thin plane of bone split off of its anterior surface for about three inches.

This portion of the femur was protruded from the wound by an assistant pushing it up and carrying the leg over the other thigh; the soft parts were protected by a wooden spatula, and two inches were sawed off. The upper portion was then sought for and the sharp end of the upper fragment of



the femur was found drawn directly across the thigh by the contraction of the psoas magnus and the iliacus internus muscles. After several ineffectual efforts to dislodge this from its position, it was seized with the lesion forceps, and by the exertion of great force, the contraction of the muscles was

sufficiently overcome to permit of their attachment to the trochanter minor being divided. The capsule of the joint was now opened. It was found impossible, owing to the shortness of this portion of the bone left, to dislocate with facility the head of the femur, so as to prevent the division of the ligamentum teres. Partial dislocation was produced by twisting the head of the bone violently at the ligament divided.

The wound was now cleansed of many large fragments and sharp spiculae of bone that were imbedded in clots, from which they had to be enucleated with the finger nail.

The wound was closed with sutures and adhesive strips; dry dressings were used; a long splint was loosely applied, so as not to prevent muscular contraction, but to keep the thigh fixed.

Two grains of opium and one and a quarter drachm brandy were directed to be given every two hours.

10 P. M. Pulse 120; patient comfortable, and expressed himself as much relieved from pain, and able to move with ease and comfort.

There have been no unpleasant symptoms since the operation; the wound did remarkably well; showed a disposition to early union.

The patient has gained strength; his appetite and digestion are good at this time (Dec 9th); his condition is as follows: Pulse 76, full and natural; tongue healthy; appetite good; sleeps well at night; is cheerful, and complains of no pain. The limb is shortened five inches; the wound has healed almost entirely.

There is a slight discharge from two points, one leading to the cotyloid cavity and the other to the bone. The cicatrix has contracted, and there seems to be a disposition to contract round the end of the bone. The amount of pus discharged is not a half an ounce in twenty-four hours.

The muscles feel firm and natural; he can move himself with facility and ease in his bed.

Case 2.

Alfred Toney, private 16th N. C.; wounded June 30th, 1863; entered hospital same day, with, apparently, a wound of left buttock, the ball remaining. No particular attention was called to this case for some time. He seemed to be doing well.

August 11th. He complained of great pain in the knee and ankle; the slightest touch produced great anguish; considerable œdema of the foot existed. Chloroform was administered, and the wound examined. The finger could not pass deeper than half an inch in the wound until the limb was carried forward; then it passed to the cotyloid cavity; the ball was felt in the acetabulum; the round ligament was severed and the head of the bone slightly fractured, and deprived of all of its cartilage. The patient was laid on his face by the edge of the table; an incision on the trochanter major, down through the tissues to the joint, was made, as in the last case.

The head of the femur was dislocated by forcibly bringing the leg under the table, a spatula placed to protect the tissues,

Operation table Rich. May 1866.

Wash. by Rich.

Operation table Rich.

Copied Rich.

Operation table Rich.

Wash. by Rich.

Copied Rich.

Operation table Rich. May 1866

and the head of the bone was sawed off. The bullet was then removed from the cavity.

The eotyloid cavity was then found to be broken across and the cartilage loosened.

The wound was closed with sutures, and the patient removed to bed.

Patient was more comfortable, had no pain, and in twenty-four hours the swelling had entirely subsided. He died on the 8th day of the operation from hectic fever.

ART. III.—*On the External Application of Oil of Turpentine as a Substitute for Quinine in Intermittent Fever, with Reports of Cases.* (Communicated.)

At the present time, when the demand for remedies is constantly upon the increase, whilst the supply is actually diminished, and this supply procurable only with difficulty, and at enormous rates, the discovery of what may, to any extent, supply the place of the costly salts of quinia, in the treatment of malarious fevers, becomes of deep interest to the profession.

Very many native remedies have been found valuable adjuncts to this powerful antiperiodic, but as yet no substitute perfectly reliable has been offered. That which at present appears to afford most promise, is the Pinckneya Pubens or Georgia bark, one of the Cinchonæ, found from New River, S. C., along the sea-coast to Florida, in which a considerable amount of cinchonine has been discovered, but of which no complete and perfectly satisfactory analysis has yet been made.

The use of the external application of the oil of turpentine, as a substitute for the internal administration of quinine, not altogether novel, but to which the attention of the Medical Bureau, has been lately called by Surg. Stiles Kennedy, is considered of sufficient importance to invite the attention of the profession at large.

The special mode of action upon which this remedy bases a claim, so far well sustained by experience, is solely and simply by means of a powerful impression upon the nervous centres, especially the central sympathetic system, to interrupt the morbid train of paroxysms established, and set in motion by the malarious poison, and to put the system in a proper condition for the employment of tonics and antiperiodics.

The mode of application, as used and recommended by the officer above mentioned, is as follows: Half an hour before the expected paroxysm, a bandage, wet with the turpentine, is applied around the body at the lower part of the chest, the linen replaced and the outside clothing buttoned. If convenient, the patient should then be placed in blankets: if not, he should be kept in sight, so that he may not remove the bandage.

Surg. K. reports the successful trial of this application without failure in "over thirty cases." The following report, however, from the General Hospital at Guyton, Georgia, selected at random from those which have up to this time been received at the office of the Surgeon-General, presents a fairer average of the results of a series of experiments instituted in several sections of the Confederacy, the blank used being that prescribed and issued from that office for special reports required upon the subject:

Special report of cases of Intermittent Fever treated by the external application of Turpentine, as a substitute for the internal administration of Quinine. Station—General Hospital, Guyton, Ga. Treated during the month of October, 1863.

Name.	Rank.	Regiment.	Type of Fever.	Date and Hour of first Chill.	Date and Hour of Expected Chill.	Time of Application of Turpentine.	How long Application continued.	Total Quantity employed.
1. Jesse W. Ward.....	Private,	30th Georgia,	Quotidian,	Oct. 21st, 5 P. M.	22d, 5 P. M.	4 P. M.	4 hours,	1 ounce.
2. John Hanly.....	Private,	63d Georgia,	Quotidian,	Oct. 28th, 3 P. M.	29th, 3 P. M.	2 P. M.	3 hours,	1 ounce.
3. J. B. McCullers.....	Private,	32d Georgia,	Quotidian,	Oct. 19th, 7 A. M.	20th, 7 A. M.	6 A. M.	4 hours,	1 ounce.
4. J. J. Grisham.....	Private,	Bartow Artillery,	Tertian,	Oct. 21st, 3 P. M.	23d, 3 P. M.	2 P. M.	3 hours,	1 ounce.
5. W. C. Geddens.....	Private,	29th Georgia,	Tertian,	Oct. 22d, 10 A. M.	24th, 10 A. M.	9 A. M.	3 hours,	1 ounce.
6. A. B. Funderbrook.....	Private,	Engineer corps,	Quotidian,	Oct. 23d, 4 P. M.	24th, 4 P. M.	3 P. M.	4 hours,	1 ounce.
7. S. Wilson.....	Private,	Engineer corps,	Quotidian,	Oct. 22d, 9 P. M.	23d, 9 P. M.	8½ P. M.	1½ hours,	1 ounce.

Result.

Case 1. Expected chill did not occur, but chills returned November 8th. Tonic bitters used in conjunction. No strangury nor any external injury to the tissues occurred. Subject to chills. Application made around the body below ensiform cartilage and patient kept in bed.

Case 2. Expected chill did not occur nor again return. No other remedies used. No strangury nor external injury to tissues. Was attacked with quotidian October 19th. Turpentine applied in same manner to same part as in case above.

Case 3. Expected chill did not occur nor again return.

Liquor potass. arsenit. given for four days after first chill. No strangury nor external injury to the tissues. Subject to chills. Application as above. Neuralgia of left temple afterwards occurred and was relieved by application of turpentine to the part.

Case 4. Expected chill did not occur, but chill returned on the 28th, and treated with quinine, no turpentine being on hand. No bad effects from use of turpentine. Fowler's solution used in conjunction, till diarrhoea appeared. Mode of application as before. Patient subject to chills and disorder of hepatic function.

Case 5. No return of chills. Treatment in conjunction, blisters and the ferri chloride. No strangury nor injury to

tissues. Not subject to chills; had remittent in camp. Place and manner of application same as in other cases.

Case 6. Expected chill did not occur, but chill returned on the 30th, and, on re-applying turpentine, did not again return. Fowler's solution after second attack and kept up till bowels became disordered. Subject to chills. Application as above.

Case 7. Expected chill did not occur nor again return. Bitter tonics in conjunction. No ill effects from use of turpentine. First attack. Application made around body below ensiform cartilage.

It will be seen from this report, that where there is a probability of the return of the paroxysm on the seventh, or fourteenth day, the repetition of the application is essential to its certain avoidance.

To insure a fair trial of the remedy, the patient should, when it may be found necessary, have the advantage of preliminary treatment, due attention being given to any visceral derangement or obstruction, and to any unnatural condition of the skin.

After the abortion of the paroxysm, tonics and antiperiodics are of course indicated, and among those most available at present, may be mentioned the cold infusion and extract of the Eupatorium and Cornus Floridæ, the powder of the Linodendron, or the compound tincture of the barks of the Linodendron, Salix and Cornus Floridæ. In chronic cases the after employment of Fowler's solution, and of the tincture ferri muriatis, will often, no doubt, prove serviceable.

In conjunction with the special mode of the treatment of malarious fever, herein narrated, the use before the paroxysm, of the warm bitter infusions as diaphoretics, is recommended. Surgeon Hinkley has lately reported several cases from the wayside hospitals at Demopolis, in which the paroxysm was completely prevented by the administration at this period, of the warm infusion of the fresh root of the Verbascum Thapsus (mullein) strength; four ounces of the green root to one pint of water, reduced to one-half by boiling; two ounces of this infusion being given every hour, commencing four hours previous to the expected chill.

It is hoped that this economical mode of treatment, the results of which have been thus far so very satisfactory, will still be persevered in, and that substantial reports of cases will be promptly forwarded, in order that a still more satisfactory conclusion may be reached, and interesting statistical information on the subject be to a larger extent given to the profession.

ART. IV.—*Case of Tetanus—Recovery.* Reported by Surg. W. A. DAVIS, Chimborazo Hospital.

Serg't M. J. Dunkum, company "D," 21st Va. infantry, admitted in Chimborazo Hospital, No. 4, Nov. 10th; was wounded on the 26th October by a cannon ball, and on 27th October right thigh was amputated, lower part of upper third by a circular operation. Symptoms of tetanus appeared about

6th inst. When admitted the tetanus was marked; lower maxilla fixed, but no tetanic convulsions; able to take nothing by the mouth except fluids; posterior muscles of neck also rigid, and painful twitching of stump; profuse perspiration; pulse 110; some appetite, and bowels regular. Stump in an unhealthy condition; a large slough, some three inches deep, separating on the external side, the line of demarkation being very plain; bone protruding about an inch, and a fungus growth from the medullary canal.

Treatment.—Cleaned the wound, and drew it together by adhesive plaster as well as possible; milk-punch, soup, eggs, &c., ordered; cit. iron and quinine and morphine, to procure sleep and rest (grains ii. to iii. daily); Labarraque's disinfectant used.

Nov. 15th.—General symptoms rather better; perspiration continues; sleeps well, and eats moderately.

The sloughing mass has dropped off, and the stump looks better and granulating.

Nov. 20th.—Tetanus slowly passing off; good appetite; sleeps well after taking i. grain morphine at night; stump doing well.

Nov. 26th.—Improving in every way.

CONFEDERATE STATES HOSPITAL REPORTS.

I.—*Statistics of Winder Hospital, Richmond, Va., from its organization, April 1, 1862, to December 1, 1863.* Surg. A. G. LANE, in charge.

Total number admitted,	39,997
" " transferred,	7,830
" " returned to duty,	20,720
" " furloughed,	6,675
" " discharged,	284
" " deserted,	1,138
" " died,	2,149
Ratio of mortality, $5\frac{21}{100}$ per cent.	

II.—*Statistics of Chimborazo Hospital from Nov. 1, 1861, to Nov. 1, 1863.* Surg. J. B. McCaw, in charge.

Total number admitted,	47,176
" " transferred,	17,384
" " returned to duty,	17,345
" " furloughed,	4,378
" " discharged,	635
" " deserted,	846
" " died,	3,031

Aggregate ratio of mortality, $6\frac{52}{100}$ per cent.

Total number VULNUS SCLOPETICUM, 6,740—Deaths, 377.
Ratio of mortality, $5\frac{54}{100}$ per cent.

Total number FERRIS TYPHOID, 3,474—Deaths, 951.
Ratio of mortality, $27\frac{56}{100}$ per cent.

Total number PNEUMONIA, 2,739—Deaths, 637.
Ratio of mortality, $20\frac{39}{100}$ per cent.

Total number ALL OTHER DISEASES, 34,223—Deaths, 1,965.
Ratio of mortality, $5\frac{74}{100}$ per cent.

*Amputation
Tetanus
Furunculosis
Tuberculosis*

III.—*Statistics of Compound Fracture of Femur. A report of cases of Compound Comminuted Fracture of the Thigh from Gun-Shot Wounds treated in Winder Hospital, Richmond, Va., since its organization, April 1, 1862, to December 1, 1863. By Surg. A. G. LANE, in charge.*

No.	Nature and Seat of Wound.	Character of Operation, Time and Point of Same.	Treatment.	Result.
1	Fracture at middle third,	Amputation, flap operation, primary, at upper third,	.....	Died.
2	Fracture at lower third,	Amputation, circular operation, secondary, at middle third,	.....	Died.
2	Fracture at lower third,	Amputation, flap operation, primary, at middle third,	.....	Recovered.
4	Fracture at lower third,	Amputation, circular operation, secondary, at middle third,	.....	Recovered.
5	Fracture at lower third,	Amputation, circular operation, secondary, at middle third,	.....	Recovered.
6	Fracture at upper third,	.....	Treated with double inclined plane,	Died.
7	Fracture at upper third,	.....	Treated with double inclined plane,	Died.
8	Fracture at upper third,	.....	Treated with double inclined plane,	Died.
9	Fracture at upper third,	.....	Treated with Smith's anterior splint,	Died.
10	Fracture at upper third,	.....	Treated with Smith's anterior splint,	Died.
11	Fracture at lower third,	.....	Treated with Smith's anterior splint,	Died.
12	Fracture at upper third,	.....	Treated with Smith's anterior splint,	Died.
13	Fracture at middle third,	.....	Treated with Smith's anterior splint,	Recovered.
14	Fracture at upper third,	.....	Treated with Smith's anterior splint,	Recovered.
15	Fracture at middle third,	.....	Treated with Smith's anterior splint,	Recovered.
16	Fracture at middle third,	.....	Treated with Smith's anterior splint,	Recovered.
17	Fracture at middle third,	.....	Treated with Smith's posterior splint,	Died.
18	Fracture at lower third,	.....	Treated with long straight splint,	Died.
19	Fracture at middle third,	.....	Supported on pillows,	Died.
20	Fracture at upper third,	.....	Supported on pillows,	Died.

SUMMARY.

	Recovered.	Died.	Total.
Operations, primary, flap.....	1	1	2
Operations, secondary, circular.....	2	1	3
Amputation at upper third.....	0	1	1
Amputation at middle third.....	3	1	4
Number treated with double inclined plane...	0	3	3
Number treated with Smith's anterior splint..	4	4	8
Number treated with Smith's posterior splint..	0	1	1
Number treated with long, straight splint.....	0	1	1
Number supported on pillows.....	0	2	2
Number of fractures at upper third.....	1	7	8
Number of fractures at middle third.....	2	3	5
Number of fractures at lower third.....	0	2	2
Number recovered, 7; number died, 13; total number treated, 20.			

IV.—*Report of cases of Gun-shot Fracture of Femur treated without operative procedure, Chimborazo Hospital.*

No. 4.—Surgeon W. M. A. DAVIS, in charge.

Case 1.—J. C., wounded June 29th, 1862, ball entering anterior aspect of left thigh, about two inches above upper edge of patella, and escaping on posterior aspect a little higher up, fracturing femur in its lower third. Limb placed in long fracture box, without extension. Patient did well, and was furloughed August 31, at which time the bone was firmly united, with very slight shortening.

Case 2.—S. H., wounded June 27, 1862, by three separate balls, fracturing right femur in its upper, middle and lower thirds, the bone being crushed throughout most of its extent. He had also flesh wounds of left leg and left shoulder.

Fractured limb made as comfortable as possible, and patient treated with tonics and nutritious diet. Died July 29th.

Case 3.—M. M., wounded June 27th, 1862, ball entering upper part of lower third of right thigh, causing oblique fracture at this point, and separating a section of the bone three-quarters of an inch in length, which was removed.

He had also a gun-shot fracture of upper third of left radius, and a flesh wound of left side exposing two false ribs.

He could bear no extension; was made as comfortable as possible, well fed, and treated with tonics and opiates. Recovered with shortening of three or four inches, and was furloughed in January, 1863.

Case 4.—J. B., wounded July 1, 1862, ball shattering the right femur at junction of middle and upper third, and remaining in the thigh. Patient died August 5th.

Case 5.—J. C., wounded July 3, 1863, ball entering on outer side of left thigh, about three inches below trochanter major, causing fracture of femur in lower part of upper third. Nov. 10, union complete, with shortening of two inches.

Case 6.—W. T., wounded July 1, 1862, ball entering middle of left thigh, passing transversely through it, causing fracture of femur at this place. Smith's anterior splint was applied and continued for fifteen days, when abscess formed in the posterior aspect of the thigh, and the splint was removed.

Tonics and good diet prescribed throughout the treatment of the case.

Diarrhoea supervened in last of July, and patient died August 7.

Case 7.—W. W., wounded July 3, 1863, ball causing fracture of right femur about the middle. Limb kept steady by sand bags; no splint used. Erysipelas supervened. Nov. 18th, union complete, with shortening of about two inches, and slight eversion of foot.

SUMMARY.

Case 1. Wounded June 29, 1862; fracture of lower third; recovered; shortening three-quarters of an inch.

Case 2. Wounded June 27th, 1862; fracture of upper, middle and lower thirds; died July 29th; complicated with flesh wounds of left leg and left shoulder.

Case 3. Wounded June 27th, 1862; fracture of lower third; recovered; shortening three to four inches; complicated with gun-shot fracture of radius and wound of side.

Case 4. Wounded July 1st, 1862; fracture of middle and upper thirds; died August 5th.

Case 5. Wounded July 3d, 1863; fracture of upper third; recovered; shortening two inches.

Case 6. Wounded July 1st, 1862; fracture of middle third; died August 7th; complicated with diarrhoea.

Case 7. Wounded July 3d, 1863; fracture of middle third; recovered; shortening two inches; complicated with erysipelas.

	Recovered.	Died.	Total.
Fracture of upper third.....	1	2	3
Fracture of middle third.....	1	1	2
Fracture of lower third.....	2	0	2

No. 2.—Surgeon S. E. HABERSHAM, in charge.

Case 1.—Gun-shot wound of right thigh, with compound comminuted fracture of femur three inches below trochanter major—bone uniting with great deformity and shortening. Death from arterial hemorrhage 328 days after receipt of wound.

J. B., a private, company "F," 19th Georgia regiment infantry, æt. 23, was admitted into this hospital on the 16th Dec., 1862, with compound comminuted fracture of right thigh from a Minie ball; also a gun-shot wound on anterior aspect of same limb, grazing tibia about six inches above ankle, and a severe contused and lacerated wound from fragment of shell on left gluteal region. In consequence of these wounds and their serious character, it was found impossible to treat the fracture with splints or extensions, and the patient was placed in as comfortable a position as possible, supported by pillows and pads. Various means of treatment were suggested by different surgeons, but all plans calculated to resist muscular contraction caused the patient so much pain and inconvenience that their use was eventually abandoned, and he was treated by position and pillows alone. The wound continued to suppurate freely from both orifices until the middle of July last, which time they healed, and patient was enabled to walk about the yard with the assistance of a crutch. In the hope of enabling him to exercise himself with less inconvenience, a starch bandage was applied to the limb, which remained on several weeks, but he found it irksome, and it was removed at his request. The wound shortly after opened again, and irritative fever occurred, from which he became much emaciated and debilitated.

On the 3d November, a profuse hemorrhage occurred at night, which was arrested by pressure upon the os pubis, but the patient gradually sank from the loss of blood, and died on the night of the 5th.

A post mortem examination revealed the following facts: Bone fractured three inches below trochanter major, which united, as per diagram, several small spiculæ of bone lying



in proximity to artery, one of which had punctured the femoral artery just below its bifurcation.

A consultation of surgeons was called, who decided that ligation of artery was inexpedient because of the certainty of gangrene of limb resulting therefrom.

Case 2.—J. M., company "D," 31st Georgia, æt. 18, gun-shot wound of lower-third of thigh, compound comminuted fracture.

J. M., company "D," 31st Georgia regiment infantry, æt. 18, was wounded June 27th, 1862, and was admitted into this hospital on July 1st, with compound comminuted fracture of lower-third of thigh, ball entering and passing through antero posteriorly. At the time of admission there was much inflammation of limb. The limb was supported upon pillows, and cold water freely applied. In a few days he was transferred to private quarters, when Smith's anterior splint was

applied. Was sent home on 15th November in charge of his family physician, the wound at the time discharging moderately; partial union was supposed to have taken place. When last heard from this patient was recovering.

Case 3.—N. T. T., company "F," 1st South Carolina regiment infantry, wounded June 27th, 1862.

N. T. T., a private, company "F," 1st South Carolina regiment infantry, entered hospital June 30th, with compound comminuted fracture of upper-third of femur. The whole limb was œdematous, and thigh extensively infiltrated. Cold water dressing was used, but the patient died July 7th of pyæmia.

Case 4.—J. D. L., wounded June 30th, 1862.

J. D. L., a private of company "F," 5th regiment South Carolina infantry, aged 22 years, was admitted July 2d, with compound comminuted fracture of upper middle-third of thigh. He was treated with cold water dressing, limb resting on pillows for several days. Smith's anterior splint was finally applied, and the patient furloughed nearly recovered.

Case 5.—W. L. C., wounded June 30th, 1862.

W. L. C., a private of company "E," 11th Alabama regiment infantry, was admitted July 2d, with compound fracture of middle-third of thigh. Was treated with cold water dressing until œdema and infiltration subsided, and Smith's anterior splint was then applied, and cold dressing continued. Patient recovered with an inch and a half of shortening of limb and thigh slightly bent antero posteriorly.

Case 6.—W. O. B., wounded July 1st, 1863.

W. O. B., company "N," 12th regiment Virginia infantry, was admitted July 3d, with compound fracture of upper-third of thigh; œdema of limb very extensive. Cold water was used while in No. 2 Division, but he was transferred to No. 1 July 9th, and died in that hospital from the effects of the wound.

Case 7.—J. A., wounded 27th June, 1862.

J. A., a private of company "B," 38th regiment Virginia infantry, was admitted July 3d, 1862, with compound comminuted fracture of upper-third of thigh bone completely crushed; great prostration. Patient died of exhaustion July 6th, 1862.

Case 8.—Compound fracture of left thigh in middle-third from gun-shot wound, and recovery of same with very little shortening or deformity.

Private J. A. G., company "K," 35th regiment Georgia infantry, was wounded on the 13th December, 1862, and admitted into the hospital on the 15th inst., with compound fracture of middle-third of left thigh from a Minie ball, entering diagonally and passing horizontally through the limb. Was treated with cold and warm water dressing, without extension, the limb simply supported on pillows, with short splint applied. This patient recovered without a bad symptom, and was transferred to Columbus, Ga., on the 16th April, 1863. Three-quarters of an inch shortening.

SUMMARY.

Upper-third, cases,.....	5—Deaths,.....	5
Middle-third, cases,.....	2—Recovered,.....	2
Lower-third, cases,.....	1—Recovered,.....	1

No. 5.—Surgeon E. M. SEABROOK, in charge.

Case 1st, No. 2296.—Private S. W. Brown, company "A," 2d Florida; wounded May 31st, 1863; admitted June 1st; compound fracture of thigh in lower-third; general health bad; aged 45 years. In this case there was shortening of the limb about an inch and a half. He left the hospital on furlough, August 21st, 1862.

Case 2d, No. 2305.—Thomas Mullen, Sergeant-Major of

11th Mississippi; wounded June 1st, 1862; admitted June 1st, 1862; amputation performed the same day; compound fracture of thigh immediately above the condyles of the femur. This patient was about 26 years old; stout and healthy. Discharged from service July 7th, 1862.

Case 3d, No. 2315.—A. Trexler Cross, Lee's battery, N. C. artillery; wounded May 31st, 1862; admitted June 1st; compound fracture of thigh immediately below the trochanters. The general health of this patient was remarkably good; aged 24 years; furloughed July 6th, 1862.

Case 4th, No. 2696.—Henry Carter, private company "A," 6th Virginia infantry; wounded June 21st, 1862; received in hospital June 22d; fracture of femur immediately above the knee; amputation performed June 23d, at the junction of the middle and lower-thirds; general health bad; aged 20 years. Necrosis of the stump occurred in this case, but the result was favorable, the stump proving a good one; transferred to Palmyra hospital, August 15th, 1863.

Case 5th, No. 2876.—B. H. Heaslitt, private company "K," 10th Alabama; wounded June 29th, 1862; admitted June 30th; compound fracture of the middle of thigh; general health good; aged 18 years. In this case there was shortening of the limb about two inches. Furloughed Aug. 21st, 1862.

Case 6th, No. 2922.—Eli Helms, private company "B," 23d North Carolina; wounded June 29th, 1862; admitted June 30th; compound fracture of thigh just below the middle; general health bad; aged 30 years; discharged July 24th, 1862.

Case 7th, No. 2996.—J. W. Suttles, private company "K," 8th Alabama; wounded June 30th, 1862; admitted July 2d; fracture of femur at its middle; aged 29 years; died July 3d. This man appeared to have died from constitutional shock.

Case 8th, No. 3020.—John Pate, private company "F," 18th North Carolina; wounded June 30th, 1862; admitted July 2d; compound fracture of thigh in upper-third; general health not good; aged 30 years; died July 26th, 1862.

Case 9th, No. 3008.—A. Wright, Lieut. company "A," 2d Florida; wounded July 1st, 1862; admitted July 2d; compound fracture of upper-third of thigh; general health not good; aged 23 years; died July 13th, 1862.

In all the above cases pillows were adjusted comfortably to the injured limbs.

SUMMARY:

Upper-third—cases, 3; deaths 2; recovered, 1.

Middle-third—cases, 2; recovered, 2.

Lower-third—cases, 4; recovered, 4.

N. B.—Two of the four cases in lower-third operated on; two not operated on.

CHRONICLE OF MEDICAL SCIENCE.

Mortality Rates of the U. S. Armies for the Year ending June, '62.
By Surgeon J. J. WOODWARD, U. S. A. [Extracts from Report to Surgeon-General U. S. A.]

The general mortality rate of the armies of the United States during the first year of the rebellion was 67.6 per thousand of mean strength, including with deaths from disease those from wounds and injuries. The mortality from disease alone was 50.4 per thousand; that from wounds and injuries of every kind 17.2 per thousand.

In contrast with these results, it may be stated that the average annual mortality from disease alone, in the United States army,

during eighteen years of peace, was 24 per thousand. In the United States army, during the Mexican war, 109.8 per thousand. In the British army, during the Crimean war, 232 per thousand. In the British army, during the year 1859, 9 per thousand. It appears, therefore, that although the mortality of the army from disease, during the first year of the present rebellion, was far heavier than that of our own or of the British army in time of peace, it was much less than that of the armies engaged in the Mexican or the Crimean wars.

The following table exhibits the monthly mortality rates of the army from July 1, 1861, to June 30, 1862. The armies have been consolidated for the purpose of comparison into three great divisions. The first consists of the troops operating on the Atlantic coast, between the Appalachian range and the sea, and includes the army of the Potomac and the various coast expeditions. The annual mortality from disease alone among these troops was 33.40 per thousand of mean strength.

The second consists of the troops operating in the central basin of the continent, between the Appalachian and the Rocky Mountains; and includes Western Virginia, the armies under Generals Buell, Grant and Pope, the department of Missouri, with the scattered troops in Kansas, Nebraska, New Mexico and the Northwest. The annual mortality from disease alone in this region was 82.19 per thousand.

The third division consists of the troops on the Pacific slope, between the Rocky Mountains and the sea. It includes those serving in northern and southern California, Oregon and Washington territory. The annual mortality rate was 10.76 per thousand.

It will thus be seen that on the Pacific slope the mortality rate was three times less than on the Atlantic coast, while that of the latter region was twice and a half less than that of the troops serving in the central region.

The small amount of mortality on the Pacific coast is worthy of attention. The rate is hardly greater than that attributed by British and New England statisticians to young men of similar ages in private life. This exemption is in part due, there can be no doubt, to the fact that on the Pacific coast our troops found themselves under conditions much more closely approximating those of peace than of war. But the rate is so much less than has ever been known in the whole United States army in time of peace, that an idea of the superior healthfulness of the Pacific coast is at once suggested. The greater mortality of the central region, as compared with the Atlantic coast, would appear to hold a close relationship to the great prevalence of malarious disease in the valleys of the Mississippi and its tributaries, which is indicated by tables III, IV and V, showing the monthly rates of camp fever, of intermittent fever, and of diarrhoea.

The three great regions above contrasted differ not only in their annual mortality rate, but the relations of mortality to season are also quite different.

Thus, on the Atlantic coast the mortality, after falling off in September, steadily increased during October, November and December, diminished through January and February, and then steadily increased again through March, April, May and June.

In the central region the mortality rates became gradually greater from July, 1861, to March, 1862, diminished in April, increased again in May, and diminished in June.

On the Pacific coast a much more fluctuating course was pursued, and quite unlike either of the others, as will be shown in the following table:

TABLE I.

Mortality rates of the armies of the United States during the year ending June 30, 1862, expressed in ratio per thousand of mean strength.

Atlantic.....	33.04
Central.....	82.19
Pacific.....	10.76

General Prevalence of Disease.

The difference between the three regions above contrasted is not so conspicuous in the general sickness rates as in the mortality, yet the whole number taken sick in the central region was greater than on the Atlantic coast, and in this again greater than on the Pacific. In the first, the number taken on sick report during the year was 3364.14 per thousand of mean strength; in the second, 2748.83, and in the third, 2586.60. It will thus be seen that in each of these regions a large proportion of the troops must have been taken sick several times during the year.

Table II. exhibits the ratio of "taken sick" for each of the three regions. It does not indicate the "constant sickness rate," but the total number taken on sick report during the month. The monthly fluctuations exhibited by this table are, of course, much less instructive than those of individual diseases; they serve, however, to indicate a gradual improvement in the sanitary condition of the army during the war.

It would be exceedingly interesting were it possible to present a table representing the "constant sickness rates" for the same period; but the imperfect data in the Surgeon-General's office, for the first year of the war, do not afford the means for computing such a table in a reliable manner.

TABLE II.

Sickness rates of the armies of the United States during the year ending June 30, 1862, expressed in ratio per thousand of mean strength.

Atlantic.....	239.75
Central.....	232.83
Pacific.....	193.51

This makes the per centage for the year, 2748.83 on the Atlantic border; 3368.14 in the Central region, and 2586.60 on the Pacific coast.

Camp Fever.

Under the head of camp fever, all the cases reported to the Surgeon General's office, as typhus, typhoid, common continued, and remittent fevers, are here concluded. Of these several categories it may well be doubted how far the cases reported as typhus were really of that character. From the details furnished by sanitary reports it appears probable that, with perhaps rare exceptions, what was regarded as typhus was, in fact, of a very different nature; severe typhoid fever, with cerebral complications, and congestive intermittents in scorbutic constitutions being shown, in some cases at least, to have been regarded as typhus. This error was not, however, very widely diffused, the whole number of cases reported as typhus amounting to but a few hundred. As for the cases reported as common continued fever, the vast majority appear to have been different only in degree of severity from those reported as typhoid or remittent. Moreover, while a certain amount of uncomplicated enteric and remittent fever certainly did occur, especially at the commencement of the war, the vast majority of the camp fevers of the army were of a mixed character, exhibiting undoubted enteric phenomena, variously combined with the periodicity and other peculiarities of malarial disease, and still further modified by the tendency of incipient scurvy, which is the ordinary concomitant of camp diet. To indicate this mixed nature, the term typho-malarial fever, which I had the honor to suggest to the department in June, 1862, appears appropriate, and, at the present time, is coming into very general use.

A correct understanding of the nature of these fevers is of the utmost importance, as they play a conspicuous part in the mortality of our armies. During the year under consideration 44.5 per cent. of all the deaths from disease were due to camp fevers.

An examination of table III. shows that the frequency and mortality of camp fever differs considerably in the three great regions. On the Atlantic border the annual ratio of cases was 238.99 per thousand of mean strength, and the ratio of deaths to cases was

71.9 per thousand, or one death to every 13.9 cases. In the central region the annual ratio of cases was 319.94 per thousand, and the ratio of deaths 101.8 per thousand cases, or one in 9.8. On the Pacific coast the annual ratio of cases was only 60.95 per thousand, and the ratio of deaths to cases 45.2, or one in 22.1. The severity of camp fever in these several regions is thus shown to differ as considerably as their frequency.

An inspection of the table at once exhibits the autumnal character of the disease. On the Atlantic coast the monthly number of attacks steadily increased until November, 1861, then as steadily diminished until March, 1862; after which they once more increased in frequency. In the central region the maximum was attained in September, 1861, followed by a gradual diminution till March, and a subsequent increase as on the Atlantic coast. On the Pacific coast, although there is less regularity in the fluctuates, it will be observed that October was the maximum month. The most superficial observer cannot fail to be struck with the similarity between these three waves and those of the intermittent fevers, of whose malarial nature there is no doubt, and which are illustrated in the next table.

TABLE III.

Rates of camp fever in the armies of the United States during the year ending June 30, 1862, expressed in ratio per thousand of mean strength.

Atlantic.....	27.07
Central.....	27.64
Pacific.....	1.78

This makes the per centage for the year 238.99 on the Atlantic border; 319.94 in the Central region, and 60.95 on the Pacific coast.

Intermittent Fever.

Intermittent fever, although a very frequent affection, has not been the cause of any great mortality. On the Atlantic border the annual ratio of cases was 195.94 per thousand of mean strength, the rate of deaths to cases 6.0 per thousand, or one to 165.9. In the central region the annual ratio was 375.34, the deaths 5.9 per thousand cases, or one to 170.0. On the Pacific coast the annual ratio was 151.68 per thousand of mean strength and no deaths.

The distinctly autumnal character of the disease is well shown in the following table:

TABLE IV.

Rates of intermittent fevers in the armies of the United States during the year ending June 30, 1862, expressed in ratio per thousand of mean strength.

Atlantic.....	16.88
Central.....	26.02
Pacific.....	12.46

This makes the per centage for the year 195.94 in the Atlantic border; 375.34 in the Central region; and 151.68 on the Pacific coast.

Diarrhœa and Dysentery.

Diarrhœa and dysentery caused about one-fourth of all the sickness reported. On the Atlantic border more than half the army suffered, and in the central region the number of cases almost equalled the mean strength. Although not nearly so fatal as camp fever, affections of this class were an important cause of the mortality of our army. In the chronic cases, though most generally called diarrhœa, and not dysentery, the colon was the seat of the chief lesion. The most characteristic post mortem appearance was a thickened, softened condition of the mucous membrane, with pigment deposit and enlargement of the solitary follicles, frequently terminating in ulceration, the ulcers being sometimes punctiform, sometimes extensive, and irregular. In this condition the small intestine frequently participated, more or less, but often presented nothing abnormal.

It appears from table V. that the annual ratio of diarrhœa and dysentery on the Atlantic coast was 646.01 cases per thousand of mean strength.

In the central region 994.77 per thousand, and on the Pacific coast 319.64. The relative mortality was, in the Atlantic region, 2.1 deaths per thousand cases, or one in 483; in the Central, 9.6 per thousand, or one in 103.8; on the Pacific, 0.9 per thousand, or one in 1,159.

TABLE V.

Rates of diarrhoea and dysentery in the armies of the United States during the year ending June 30, 1862, expressed in ratio per thousand of mean strength.

Atlantic.....	87.06
Central.....	83.02
Pacific.....	30.25

This makes the per centage for the year 646.01 on the Atlantic border; 994.77 in the Central region; and 319.64 on the Pacific coast.

Catarrhal Affections.

Catarrhal affections of every class were exceedingly common, attacking nearly one-half the forces in the field. The relative frequency in the three regions of the country appears to have been about the same. On the Atlantic border 456.47 per thousand of mean strength. In the Central region 427.2 per thousand, and on the Pacific slope 407.61. In all, the frequency of these affections increased greatly during the winter, and diminished during the warmer months. The maximum month being January for the Atlantic and Central, and February for the Pacific region. A large proportion of the severer catarrhal cases occurred as sequellæ to camp measles. The vast majority of the simple catarrhal cases terminated in recovery, the deaths being one to every 1,127.8 cases on the Atlantic coast; one to every 560.0 cases in the Central region; and no deaths occurring from this cause on the Pacific region. A certain number of these catarrhal cases, however, terminated in pneumonia, and thus a part, at least, of the mortality of catarrhal affections is reported under that head. The annual rates of pneumonia for the three regions were as follows: On the Atlantic coast, 25.7 cases per thousand of mean strength, the deaths being 131.1 per thousand cases, or one death to every 7.6 cases; in the Central region the cases were 64.2 per thousand of mean strength, the deaths 239.2 per thousand, or one to every 4.1; on the Pacific slope the cases were 20.9 per thousand of mean strength, the deaths 13.1 per thousand cases, or one to 76.

TABLE VI.

Rate of catarrhal affections in the armies of the United States during the year ending June 30, 1862, expressed in the ratio per thousand of mean strength.

Atlantic.....	11.33
Central.....	11.71
Pacific.....	17.25

This makes the per centage for the year 456.47 on the Atlantic border; 427.20 in the Central region; and 407.61 on the Pacific coast—*Army and Navy Journal*.

C. S. Medical & Surgical Journal.

RICHMOND, JANUARY, 1864.

AYRES & WADE.....PUBLISHERS.

Salutatory.

The Confederate States Medical and Surgical Journal, on making its first appearance before the public, might be expected, under usual circumstances, to congratulate itself and its readers on the new bonds of union and sympathy about to be established between them, and with every feeling of hope

and anticipation of success, would close a buoyant paragraph by offering to all those interested in its welfare the compliments of the season. But the stern realities of this eventful period, force us to overlook the amenities of life, and with the earnest wish to do good to our noble profession and still nobler cause, we address ourselves at once to the work before us.

Amid the din of war's wild alarms, when the shock of opposing armies is felt around us, while a new-born nation struggles for its breath, even then the calm, peaceful voice of Science is heard. Let all who love her heed the call. The medical men of the South have had their part to play in the terrible drama. To them have been intrusted the health and well-being of our brave soldiers. Fierce epidemics, spreading fast through crowds of raw recruits, hastily collected, but half prepared for the exposures of camp, and wholly ignorant of the precautions needed to resist disease, have been combatted; an almost total neglect of the laws of hygiene and oftentimes defective nutrition, resulting from improper and badly cooked food, or even a scarcity of the proper articles of diet, have sapped the constitution of the strongest; while the casualties of battle, in a thousand forms, have demanded the most active and immediate surgical interference.

To do justice to the hereculean task, to vindicate themselves and their art, the medical staff of our army must fulfil its duty to Science, and prepare to lay before the world the results of its labors. The Journal desires to be the representative of the profession, the exponent of its views, the record of its experience.

Not only as the organ of the Southern medical profession, but as a means of imparting information to those who have, for three years, been debarred from any intercourse with the scientific world, will the publication of a medical periodical be found useful—indeed, an absolute necessity. By taking advantage of the many opportunities to collect the recent literature of medicine, whether as the elaborate treatise or the floating but more practical periodical literature of England and the Continent, the editor hopes to render essential service to his readers, whilst with free access to the archives and reports of the Medical Department, and with the approval and under the supervision of the Surgeon-General, the vast statistics and tabulated records of the war can be carefully collated and made to subserve their legitimate uses.

The task before us is arduous, the difficulties many, but if our brethren will give us an active and steady co-operation, success is not doubtful. We may have the proud satisfaction of believing that something has been done by us to advance and adorn the science to which our lives have been devoted, and with increased opportunities of knowledge we will be better able to do full justice to those whose lives are placed in our charge.

Association of Army and Navy Surgeons.

At a time when concert of action has been invoked in almost all the departments of the Government for objects of temporary and often doubtful merit, it is gratifying to record,

that the head of the Medical Department, equally provident in its executive capacity in establishing order and method in the distribution of official business, and securing such results as grow out of a wisely-conducted and pains-taking administration, has not lost sight of the permanent advantages that might accrue to science out of the progress of this war.

In an earnest and unambiguous zeal for the promotion of our science, and with the judicious foresight which has characterized the vigorous and systematic exertions of the Medical Department, it has enlarged our facilities, and even *created* the means for prosecuting research under most favorable auspices.

Convinced of the great utility of some associated effort among the medical officers of the army, in order to elicit that kind of information which might be said to constitute the individual wealth of the possessor, and therefore not willingly imparted, and certainly not to be voluntarily communicated but through the medium of a mutual interchange of sentiment; reflecting upon the material arrayed in so vast an arena, where observation has long been busied in subjecting speculative inquiry to the rigor of experimental research; and impressed with the belief that by this time we were prepared to speak with authority on most, if not all problematical points, the solution of which would go to form a complete and perfect record of our military surgery, it was thought expedient to convene a meeting of the surgeons of both army and navy, assembled at the capital, who, in debate, and in communication with the field medical officers, might, by the examination of subjects of interest, reach the individual opinions of the medical staff everywhere, and thereby arrive at the expression of a general sentiment as the definite decision upon all such subjects.

Justly appreciating the interest which would be felt in such a project, and the number of contributors who would share in the advantages which its realization would confer, the enterprise was first communicated to those most desirous to promote its successful fulfilment, and then made the subject of a more general deliberation at a meeting sometime since held in this city.

There were many advantages to be obtained from the establishment of a society of this kind, at this particular time, conspicuous among which was co-operation between hospital and field surgeons in the discussion of subjects requiring information from both sources. A provision in the constitution of this association, making corresponding members of those in active service in the field, brings their experience and performances in pertinent relation with that derived from hospital practice, and unfolds results not otherwise reached in all their details, and not exactly to be obtained from the purely statistical records extemporaneously collated amidst moving armies, and for accuracy and completeness, perhaps hopelessly irreconcilable with the accidents of war and confusion of battles.

Private communications addressed to such a body from our field surgeons, while memory is fresh with the most striking events in which they have been participants, are made in all

the fullness of easy discussion, untrammelled by the provisional limitations within which they would otherwise be restricted in official reports, and are hence rendered far more available for scientific purposes; and it can be little doubted, that invited to this freedom of discussion, much information will be thus secured, which, under the circumstances mentioned, is frequently lost, or the record indefinitely postponed to a more convenient season, when the review of the past is only remembered to lament how much has been forgotten. The latitude given to expression of opinion elicits whatever of novelty may attach itself to the views of particular individuals, and develops the progress reasonably expected, where the amplest materials are at the command of diligent observers and original thinkers.

The debates which ensue must likewise bring to bear upon the most important subjects under consideration, the enlightenment of minds diversely exercised upon the various phases such topics may present, which would scarcely be examined from as many different points of view by any one individual, when so little time is offered for elaborate investigations or bibliographic review; and this prompt and efficient mode of educating the best and most approved methods of inquiry is not among the least invaluable benefits derived from this public consultation of opinions.

These deliberations also conduce to the promulgation of new discoveries and improvements in our art, not alike accessible to all, since they may be derived from European sources that have reached only some of us, through obstacles and difficulties which a protracted blockade has established.

The repeated meetings of the society serve again to invite attention to a class of facts best illustrated by pathological anatomy, and such specimens as are sometimes exhibited may, probably, lay the foundation of some subsequent collection as the nucleus of a museum of pathology, in which all the forms of injuries from fire-arms, the peculiar effects of the Minie ball, and interesting processes of repair shall be displayed.

In presence of the diversified labors which such an enterprise suggests, we have reason to congratulate ourselves in announcing the existence, and already active operations, of an organization of the kind.

Indeed, it may be said that the month of August just passed inaugurated a new phase in the aspect of affairs, directly promotive of the great interests of the service. It was during the latter part of August, 1863, under the auspices of the Surgeon-General, that the large number of surgeons of Richmond, through the polite invitation of the Faculty of the Medical College in this city, assembled in one of the halls of that institution to organize an Association of Army and Navy Surgeons of the Confederate States. Upon motion of Professor McCaw, the Surgeon-General was called to the chair, and Surgeon W. A. Davis acted as secretary. At the request of the chairman, Surgeon Middleton Michel stated the objects which convened them on the occasion, and congratulated those present on the large attendance of surgeons, who had so promptly and willingly responded to the call. He observed,

that it was the subject of unfeigned gratification, since it gave confidence in the interest likely to be felt in the plan to be proposed, and some degree of assurance as to its ultimate accomplishment. Referring to the experience which the active surgery of more than two years must have developed, he alluded to the skillful interventions of surgical art which had been exhibited, remarking that, perhaps, even such errors as may have been committed, would lead to the establishment of new methods, the instituting of new experiments, which, in their turn, would serve either to communicate information or rectify misconception. Urging the necessity for some simultaneous action, among the surgeons of the Confederate Army, in systematizing their labors and intercommunicating their results, he endeavored to show the expediency of at once establishing an association for the advancement of such an object.

Surgeon J. B. McCaw, in most earnest and fraternal sentiments of regard, seconded these remarks, in welcoming to the hall in which he holds the professorial chair the large delegation of the profession, gathered from distant homes, who have entered upon a pilgrimage in behalf of the interests, the health and comfort of the sick and wounded soldier. He moved that a committee be appointed by the chair to draft a constitution, which being reported upon, was read, discussed and adopted.

Surgeon Garnett moved the appointment of a committee by the chair for the nomination of permanent officers. The same were ballotted for and duly elected. With such changes as have recently occurred through resignations and transfers of position, the present officers of the Association are: Samuel P. Moore, M. D., President; J. B. McCaw, M. D., 1st Vice President; D. Conrad, M. D., C. S. N., 2d Vice President; W. A. Davis, M. D., 1st Recording Secretary; W. A. Thom, M. D., 2d Recording Secretary; M. Michel, M. D., 1st Corresponding Secretary; S. Jenkins, M. D., 2d Corresponding Secretary; and J. S. Wilson, M. D., Treasurer.

The debates of this Society have been attended with much interest, and have already eventuated in developing new channels of thought, and, in some respects, disclosed very unexpected and instructive results. Series of questions have for some time been under the consideration of the army surgeons and members of the association, which have been carefully replied to and cautiously considered. Reports of the conclusions arrived at, after weighing the enlightened sentiments of its members and correspondents, may reasonably be supposed to constitute hereafter no inconspicuous portion of the annals of this war. Consonant with this plan, a report of some length was read at the last meeting of the association by Surgeon Michel, embodying a resume of those general considerations on gun-shot wounds contemplated in the first set of questions; in which it was shown that, taking the expression of opinions which have reached us from all portions of the army, both from field and hospital service, it was impossible to determine the orifices of entrance and exit in gun-shot wounds by any one feature that may be ascribed to them, though collateral and contingent circum-

stances would very often adjudge the question. Those characteristics, most frequently referred to as pertaining to these apertures, were shown to be unreliable, for obvious physical reasons which were discursively examined. With regard to the of healing gun-shot wounds by first intention, observations from authentic sources were adduced to justify the conclusion that such an event, even under the destructive influences of an agent like the minie ball, is not impossible. Cases of great interest were mentioned from Surgeons H. F. Campbell, J. B. Read, C. J. Clark, W. S. Mitchell, A. M. Fauntleroy, and others. On the subject of chloroform, a long, instructive and very general discussion arose, in which the invaluable offices of this anæsthetic agent were dwelt upon, especially by Surg. Bolton, while reports read from every battle-field in the Confederacy have served to show the innoxiousness of this potent agent. Where chloroform has been cautiously administered, but one death has been reported which could be justly ascribed to its influences, and in this instance death occurred suddenly. Though various methods of administering anæsthetics, such as have been recommended by Simpson, Snow, and others, and numerous apparatus contrived for the purpose, have been tried, yet no plan has proved safer, better, or more economical than the ordinary mode of presenting it on a small sponge, held at a little distance from the nostrils, and covered by a handkerchief, to prevent too rapid evaporation.

No subject in surgery is more important than that of secondary hæmorrhage, consequent upon gun-shot wounds. This subject, in all its bearings, has claimed much attention, and has especially given rise to views no less novel than strictly scientific, within certain limits. In reference to effects observable in a part after ligation of the main artery for the arrestment of hæmorrhage, Surgeon Campbell furnished additional evidence, on physiological grounds, for considering two very different forms of gangrene, by illustrating the results which followed these operations in limbs in which this morbid condition had commenced and was arrested.

Anticipating communications from our field and hospital surgeons on the subject of primary and secondary hæmorrhages, still under consideration, we may infer, from what have already been received, that important reports will, in due time, be specially addressed to the relative value in such instances of local deligation and ligation above the seat of injury.

In accordance with a wish frequently intimated by corresponding members, we here append a copy of the constitution of the association, requesting a continuance of that interest heretofore manifested by those who, even at a distance, have shared in our deliberations, and may be said to have met us in convention through the essays and papers they have so generously communicated:

CONSTITUTION.

ARTICLE I.

This Association shall be entitled the "Association of Army and Navy Surgeons," and shall have for its object the elucidation of practical and scientific points in the Military Surgery of this war, as illustrated by the individual experience of its members.

Its business shall be transacted at the seat of Government.

ARTICLE II.

Its special design being to increase our information on subjects relating to Medical and Surgical Science by the accumulation of reliable data from the most authentic sources, it is proposed that its members prepare themselves on such points as have particularly engaged their attention, and that they make known their views or opinions to this Association either through the medium of open discussion, or by the reading of papers or essays.

ARTICLE III.

In further fulfilment of this purpose the President will, at one meeting, submit questions on subjects requiring special investigation, the response to which will constitute the principle object of the next meeting, when members will be invited to join in debate, and sustain their views by illustrative cases.

ARTICLE IV.

The papers, essays, or monographs thus furnished, will be handed to the Recording Secretary and will thus constitute the memoirs of the Association.

ARTICLE V.

The aim of this Association being the recognition of the particular opinions of the prominent members of the Medical Staff of the Army and Navy on all subjects contributing to the advancement of Science and alleviation of human suffering, they will be credited with whatever originality is found connected with their researches, by the record of their names in the minutes of the Society, and the careful preservation of their communications.

ARTICLE VI.

Every Surgeon and Assistant-Surgeon of the Medical Staff of the Confederate States Army and Navy may become a member of this Association by signing the Constitution and contributing the sum of ten dollars.

ARTICLE VII.

The Association shall be composed of resident, corresponding, and honorary members.

Correspondents may become members by communicating papers on Medical or Surgical subjects, and by intimating their desire to subscribe to the By-Laws and Constitution.

Honorary members, when duly proposed, shall be duly elected by a majority of the Society present.

ARTICLE VIII.

The officers shall be a President, two Vice-Presidents, two Corresponding Secretaries and two Recording Secretaries.

ARTICLE IX.

The meetings of this body shall be held every fortnight, on Saturday evening, at 7 o'clock in winter and at 8 o'clock in summer.

ARTICLE X.

Special meetings may be called by the President on the written application of five members, notice being given a day previous in one or more of the papers of the city, when ten members will constitute a quorum.

ARTICLE XI.

The President shall preside at all meetings, and in his absence one of the Vice-Presidents. He must preserve order, regulate the debates, and previous to adjournment propose questions for discussion at the ensuing meeting.

ARTICLE XII.

The Recording Secretaries shall attend all meetings, and make correct minutes of the proceedings, keeping on file and arranging

all papers, essays, &c., read before this Association. They shall, under direction of the President, serve all notices and conduct all other correspondence deemed necessary, and receive all monies paid into the Association. The special business of the Corresponding Secretaries will consist in their forwarding, by letter or telegraph, the interrogatories proposed by the Chair to all corresponding members, urging a reply and contributions in the form of papers, essays, etc., etc., which it shall be their duty to read before the Association and hand over to the Recording Secretaries.

ARTICLE XIII.

This Constitution may be altered or amended at any regular meeting by a vote of two-thirds of the members present, provided that written notice of such proposed alteration or amendment shall have been given at three previous meetings.

To Contributors.

Original Communications of merit will always find a welcome place in our columns. Such papers should be brief, pointed and free from any controversial or personal character.

A section of the Journal will always be devoted to *Hospital Reports*. Here, the vast mass of statistics may be slowly and patiently elaborated and placed on record. The interesting subject of compound fracture of femur, and the surgical procedures adopted with results, has been commenced in this number. If hospital surgeons will work actively and accurately in this immense field, many interesting deductions will be developed.

A *Chronicle of Medical Science* will be found in each number, collated from recent foreign works and periodicals, which will increase in value and interest as our material enlarges.

Lastly—an *Editorial and Miscellaneous* department will enable the Journal to give much information of general interest in the collateral branches of science.

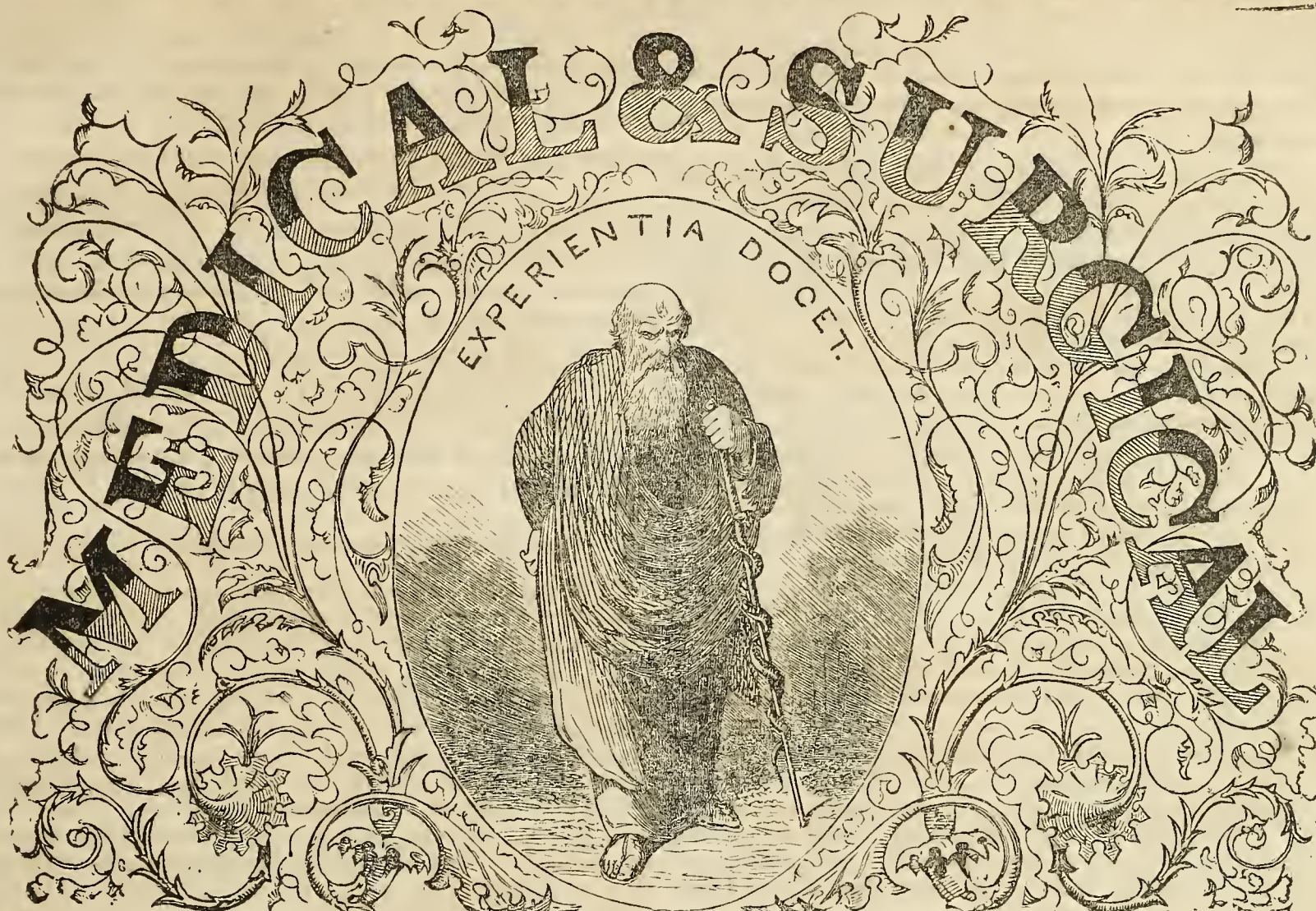
It will be observed that, instead of a weekly journal in octavo form, a monthly in quarto has been substituted. The uncertainty of the mails and a great economy in paper, with increased amount of reading matter, led to a change of plan in this respect.

All literary matter will be addressed to the Editor; business communications and remittances to the Publishers, Messrs. Ayres & Wade, who will forward the Journal promptly on the receipt of the subscription—*Ten Dollars*—beginning with the first number.

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CONFEDERATE STATES



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ORIGINAL COMMUNICATIONS.

ART. I.—*Report on the Yellow Fever Epidemic at Wilmington, N. C., in the Autumn of 1862.* By WM. T. WRAGG, Surgeon P. A. C. S.

[It is to be regretted that want of space compels us to abridge this interesting paper. Surgeon Wragg premises his report with a sketch of the topography of Wilmington. A sandy soil rests upon a sub-layer filled with water, so that slight depressions result in the formation of ponds which stagnate under the vertical rays of a tropical sun. These ponds were increased in size and number by the breastworks thrown up for the defence of the city, while the artificial drainage heretofore in use had, owing to the exigency of the times, been almost entirely neglected.

The hygienic condition of the city is described as being terrible in the extreme. The streets and yards were filled with heaps of filth and ordure, rotting in the sun. Disagreeable odors filled the air, requiring the constant use of tar-fires, whilst a dark canopy of smoke overhung the devoted spot. When we add to this the fact that many of the population were in want of the necessities and comforts of life, living in the midst of this mass of decaying matter, we will

not be surprised to hear that the physicians of the place stated that the season was unusually sickly, and that fevers of a malarial type, often terminating in jaundice, were becoming daily more prevalent.—ED.]

History of the Epidemic.—Such was the state of things in and around the city of Wilmington when the Kate arrived at her wharf, near the foot of Market street, on the 6th of August, at 2 o'clock, P. M. Desiring to ascertain, as far as possible, what agency, if any, this arrival may have had on the origin of the yellow fever, I instituted a strict enquiry, both among the physicians and the inhabitants.

My first object was to know whether any cases of fever with symptoms like those of yellow fever (whether they had terminated fatally or favorably) had occurred before the arrival of the Kate. The first information was incidentally obtained from the inhabitants of one of the humble residences near the Rouse pond. This entire family (the Lamons) passed through the disease, one of them (Mrs. Nichols) dying with black vomit. I was informed here that they had been performing the last offices for those who had died around them for many weeks, and among others they mentioned Smith, the guard man, who had died about the 1st of August, under the care of Dr. Schonwald. He was sick, they

said, four days, and when he died the body was yellow and in every respect like those they had since seen.

I called on Dr. Schonwald, and obtained from him the following notes, extracted from his book, which I will give in his own words:

"On the 22d June I was called to see Mr. Cling, of the German Volunteers, who lived in an alley near Front street, opposite the Cape Fear Bank. The symptoms were pain in the head and back, aching all over, high fever for two days; could not retain anything on the stomach for four or five days; inclined to vomit all the time; turned yellow all over; remained yellow till and after recovery.

"On the 26th July was called by A. E. Hall, Esq., to attend a mulatto boy, J. Lutterlow. He was previously attended by another physician. Symptoms: had high fever; yellow all over; could not retain anything on his stomach; what he vomited looked like snuff; restless all the time; died two days after I was called to see him; lived in Third street.

"On the 30th July I was called to see Mrs. E. Hausley. Symptoms, severe pain in the head and back, aching in all the limbs, high fever for two days after; she could not retain anything on her stomach for three or four days; inclined to vomit all the time; what she threw up looked like snuff mixed with blood; turned yellow all over; remained yellow till and after she recovered; lives corner of Seventh and Red Cross streets.

"On the 4th August I was called to see Lieut. Davidson, of Newkirk's cavalry company. Symptoms were severe pain in head and back, aching all over, high fever, inclined to vomit; vomited black bloody stuff, and passed the same; turned yellow all over. I considered it a dangerous case. Dr. Thomas was called in. He died two days after. Lived in Third street, north of Market.

"On the 5th August I was called to see a girl boarding at Mrs. McLin's. Her name was Georgia Weeks. It was a house of ill-fame. Symptoms, severe pain in head and back; vomiting black stuff; could not take medicine or any nourishment; vomiting all the time; yellow all over. Died next morning. Was sick two days before I saw her. Lived in Water street in a house called Hole-in-the-Wall."

Four out of five of these cases, it will be seen, threw up black vomit, and all of them antedated the arrival of the Kate, and though they occurred in the practice of one not recognized by the medical fraternity of Wilmington as one of the profession, they are, nevertheless, entitled to be considered as facts for record and examination. It was well known in Wilmington that they had occurred. The symptoms they presented were the subject of conversation, and one of them (that of Lieut. Davidson) finally terminated under the care of Dr. Thomas, one of the most distinguished physicians of the place.

It is very much to be regretted that the illness and absence from Wilmington of this gentleman prevented me from obtaining in writing the valuable information he possessed in relation to this subject. I may state here, however, that, in conversation with me, he gave me many details entirely corroborative of the statements of Dr. Anderson in relation to the sanitary condition of Wilmington, which statements will be given in the very words of that accomplished physician.

Dr. Schonwald goes on as follows:

"On the 8th of August I was called to visit a man named Robert Smith, town guard, and a butcher. Symptoms cold

hands and feet; head hot; yellow all over; vomited black stuff. Died 9 o'clock next morning. I understood he had been stimulating for five days. Complained of being sick in his intoxication. Took sick 9 o'clock at night, and died next morning 9 o'clock. Lived in Fifth street."

This man Smith, the guard man, as I learned from his neighbors, died after an illness of four days, so that, although he was seen by Dr. Schonwald on the 8th, he was taken on the 5th, which brings his case also anterior to the arrival of the Kate. He also had black vomit, making five out of six of Dr. S.'s cases with that symptom. His residence was a short distance north of the Rouse pond.

We have here, then, six cases of well marked yellow fever, all occurring before the arrival of the Kate, in the practice of one physician. I will now introduce the testimony of Dr. Anderson as I took it down from his dictation.

Dr. Anderson's Statement.

"During July, August and September the entire country was deluged with rain. Ponds formed on high and dry places where water was never known to accumulate before, and, owing to neglect of the culverts, especially on Front street, near Robert's foundry, a large long, shallow pond was formed, the bottom of which was composed entirely of the sweepings of the streets—old shoes, rags, pieces of tin, and refuse matter of all descriptions, which had been thrown in by the town carts, in order to raise the valley to a level with the adjoining streets. This spot is known by the name of the Rouse lot. The bottom of this pond was alternately dry from evaporation, and exposed to the intense heat of the sun, and then again filled by fresh rains, when it was covered by green slime, and exhaled a most offensive odor. One square south of this pond, in the direction of the prevailing winds, the first cases of fever commenced. On the first day of August a young man in the employment of Government, by the name of Morris, was taken sick, with all the symptoms of yellow fever, and recovered after a protracted illness.

"Three squares east of the Rouse pond, on Fourth street, another pond formed in the immediate vicinity of a house occupied by Mrs. Johnson, who died with black vomit, and had two children ill with yellow fever. These cases occurred about the 12th of August. One square south of the same pond the case of Smith, the guard man, occurred on the 5th August. Around these two ponds many fatal cases of the disease have continued to occur during the whole course of the epidemic.

"In the Campbell house, one door north of the Rouse pond, several fatal cases occurred; and this quarter of the town has been more afflicted than any other.

"On Market street, commencing at the Carolina Hotel, on the north side, there is a range of cellars which have been covered at least one foot deep with water, and though frequently bailed out, continued to be flooded, and are still filled with water. Most of these cellars are unused, but are more or less filled with accumulated trash, scraps of old leather and decayed harness. Four of the druggists' stores are over these cellars, and floating about in the water were straw from old hampers of wine and medicines, leaky casks of oil, varnish, acids and paint. One could hardly walk in these cellars without having the water coming over the tops of the boots; and in the open area in front, where the water was exposed to the sun and light, a thick coating of green slime floated on the surface.

"One of the druggists occupying these stores was among the earliest victims of the disease; and from another two

more were buried in succession; and from the third both the principal and assistant were taken down with the disease; and the occupant of the fourth was also ill. Indeed, for several days there was no druggist in Wilmington, and the stores had to be supplied from Mobile, Charleston and Savannah.

"On the south side of Market street, just opposite to these drug stores, many fatal cases occurred, and scarcely one of the inhabitants of this section of the city escaped an attack, which, in most cases, proved fatal.

"On that part of Water street lying north of Market there are no cellars to the buildings, but the floors are, for the most part, raised two feet from the ground, with free ventilation by means of perforated copper-plates let into the wall. The incessant rains had flooded the earth beneath these floors to such an extent that the water rose above the joists and splashed up through the cracks of the floor as persons walked over them. These stores were occupied by small retail dealers, mostly Germans, and it was notorious that the earliest cases of the fever were among them.

"The deluging rains were succeeded by an unusually high range of the thermometer with most scorching heat of sun, almost insupportable by man, and even by the animals of labor. The city was enveloped in vapor from this heat and dampness, and at the same time the dew point was unusually high. The leaves were covered with moisture as after a heavy rain. Everything was covered with mould—even the books in the libraries and clothes in the presses. Shoes cleaned over night were mouldy in the morning. The goods in the stores were in the same condition.

"Owing to the absence of the population in consequence of the fear of an attack on the city, and the attention of the authorities being turned to the defences of the place, little or no scavenging had been done for some time, so that the more populous portions of the city were in a very dirty condition, with large quantities of decaying offal collected in the yards. This was particularly the case in the Marcus Hotel, at the corner of Market and Front streets, and also the Palmetto, a few doors north of market street, in both of which early and malignant cases of yellow fever occurred.

"On the eastern border of the town, at the distance of about half a mile from the limits, there is an extensive mill-pond, long and narrow, and facing the whole of that side of the town. It covers from 50 to 100 acres of land. About the latter part of August, in the midst of the heavy rains, the dam broke and emptied the contents of this extensive pond to the depth of five or six feet, laying bare large quantities of rotting wood and extensive margins of slimy soil. From this denuded surface there arose a most offensive odor, which was wafted directly towards the city by an unusual prevalence of easterly wind. The skirt of woods which intervened between this pond and the city had just been cut down to allow the guns, placed in position on its city side, to play, so that there was no impediment to the progress of the malaria. The earth has been broken up all around the city for the construction of fortifications, thereby exposing extensive surfaces of fresh soil. Nearer to the city, and, indeed, within its limits, around the Marine Hospital, which is built on a high, hilly, and usually, perfectly dry spot, the heavy rains have caused the water in the little valleys to rise and fall, alternately, above and below the surface of the earth as the rain was more or less abundant. And near by this same region, on the lot occupied by the State stables, is an extensive pond, covered by green vegetation, into which the refuse of the stables has been deposited for many months, producing a most offensive state of things.

"This region has been occupied for many months by encampments of soldiers, by whom much filth and refuse have been collected in the by-places.

"The health of this part of the town, which in ordinary

seasons has been very good, has this year been very severely handled by the epidemic. These causes of disease, it would appear, have been producing an unhealthy state of the atmosphere for many weeks previous to the appearance of yellow fever. Camp measles, dysentery and typhoid, in an aggravated form, were very common. Jaundice had been epidemic. It has been estimated that about one-fourth of the remaining population, and the soldiers had the disease, which in many cases proved fatal. Many cases, at the time supposed to have been jaundice, are now believed to have been early cases of yellow fever.

"Under this state of things in Wilmington, the steamer Kate arrived from Nassau on the 6th of August, which port she left about the 2d. Captain Lockwood stated to gentlemen in Wilmington that the yellow fever had been carried into Nassau by the ship Flying Cloud, from Havana, which port she left early in July, loaded with coal, having reached Nassau about the middle of the same month. Soon after the arrival of the Flying Cloud in Nassau, the British steamer Kersonese took her place to leeward of her. The Flying Cloud had the disease on board at that time, and it was soon communicated to the crew of the Kersonese, several of whom died of it on the passage of that ship to Bermuda. It was in the same way communicated to other vessels in the port of Nassau, and finally to the inhabitants of the town; this being the first time it has ever been known to have been epidemic in that place.

"The Kate, in her passage out, was chased by a Federal steamer for several days. The fires in the furnaces were driven to the utmost extent that prudence allowed. Very little wind prevailed, and what did blow was aft, so that the circulation of air on board of the vessel was very imperfect. The engineer states that at the time of the chase, and up to the arrival in Wilmington, the vessel was so much heated from the fires in the furnaces, that the thermometer stood at 140° in the saloons, gangways and state-rooms; that the woodwork was so much heated that it was impossible to bear the hand pressed upon it; that in the fire and engine rooms the thermometer stood at 180°; the men worked in nothing but their drawers, and were bathed in perspiration; and this heated condition of the vessel was kept up for several days after her arrival in the port of Wilmington consequent upon the intense heat of the atmosphere there.

"The vessel arrived in Wilmington at 2 o'clock P. M., August the 6th, one of the hottest and most oppressive days of the season. Immediately after arrival, Dr. Anderson was called to see O'Donohoe, one of the firemen, who had been taken sick the day before, being the third day out from Nassau. His symptoms were intense headache, injected eyes, pain in the back, nausea and vomiting. In his delirium that night he strayed away from the ship and Dr. Anderson saw him no more. After rambling about for thirty hours, he was taken into the Marine Hospital on the morning of the 8th, where he died in a few hours.

"On the evening of the 16th August, Dr. Anderson was called to visit a seaman, named Dennis Mitchel, of the Kate, in the house of a man named Campbell, 420 feet north of the Rouse pond above described. He had been sick for several days on board the Kate while lying at the Marine Railway near by. This patient had all the symptoms of a violent attack of yellow fever. He was delirious, and refused medicine. On the morning of the 17th (the next day) the body was laid out ready for interment, while the adjoining room was filled with spectators of both sexes examining the body and indulging in a carousal. Three or four days after the death of Mitchel, Campbell, the proprietor of the house, his wife and children, all died of the disease, as did, also, many of the other spectators.

"At the same time, on the opposite corner of the square, Mrs. Peterson was attacked and recovered, but two inmates of her house have since died.

"On the 21st of August, Dr. A. was called to see Mr. Egan, chief mate of the Kate, on board the vessel which had by that time left the Marine Railway, after having cleansed and prepared for the reception of her outward cargo. On the same evening he was removed to the Palmetto Hotel, where he was kindly attended by the proprietor, Mr. Bailey and his son and other members of the family. On the 24th, the Kate sailed with Mr. Egan on board, convalescent. Mrs. Bailey and her son have both died of the disease, having been attacked, the latter in the beginning of October, and the former about the middle.

"Before leaving the history of the Kate it may be stated that she was discharged by soldiers detailed from regiments stationed near the city, and, so far as can be ascertained, no case of yellow fever has occurred among them, nor among any of the partners or employees of the firm to whom she was consigned, as was positively affirmed by one of the partners.

"On the 15th of August, Mr. Thomas Holden was attacked with all the symptoms of yellow fever. He lived at least half a mile from where the Kate lay, having had no communication whatever with her.

"On the 28th August, Dr. A. saw Walter Furlong, who had all the symptoms of yellow fever. He lived near the Catholic church, in a central part of the town, having had no communication with the Kate, or any of the places where her sick had been. He recovered.

"From this date the disease increased rapidly in the practice of Dr. A. and the other physicians of Wilmington, and on the 14th September, the official announcement was made that it was epidemic. On the 28th, Dr. Dickson, one of the most distinguished physicians of the State, fell a victim to the scourge, and soon after, Drs. Thomas, Swann and Love were attacked, and after severe illness, happily recovered. At this time there were only three out of eight resident physicians left for duty."

Here Dr. Anderson's highly important statement ends. It will be observed that the case of the young man Morris, in Government employment, is mentioned as having occurred on the first of August, one square south of the Rouse pond, making the seventh for which the Kate cannot be held responsible; while the cases of Mrs. Johnson and her two children, in the vicinity of the same pond, being only three squares east of it, and adjoining another pond, occurred *about* the 12th. If they *commenced* on the 12th, they were only six days after the arrival of the vessel and while she was half a mile off in a direction against the prevailing winds; and if they *terminated* at the time stated, they must have sickened before the vessel arrived.

On the 6th August, the day the Kate arrived, Dr. Anderson saw O'Donohoe on board. He left the vessel that night in his delirium, and after wandering about for thirty hours, was taken into the Marine Hospital on the morning of the 8th, where he died the same day. There was, no doubt, in the minds of any who saw him, of the nature of his disease. Let us see if he communicated it to the inmates of the institution.

By the kindness of Surgeon Custis, of that hospital, I obtained from the books of the house the following facts: The next death that occurred after O'Donohoe's was that of Dixon, who entered the hospital on the 20th of August, twelve days

after the death of O'Donohoe, having been ill for some days previous. "He had daily paroxysms of chill and fever, and died on the 26th of August, in a congestive chill." The next death was that of Veach, on 28th August, "of remittent fever." The next was that of Getty, and "his was the first case of black vomit. He was admitted on the 28th September. He recovered. He had been in Wilmington doing provost guard duty."

This man, Getty, it will be remarked, entered the hospital fifty-one days after the death of O'Donohoe. It will, also, be noticed, that he had been doing exposed duty in Wilmington after the yellow fever had been officially declared epidemic.

After this time, other cases of yellow fever were admitted and treated in the hospital, and Surgeon Custis informed me that they all had been constantly about the streets of Wilmington, on duty or otherwise.

The next point to which my inquiries were turned, was to ascertain if the disease had spread beyond the immediate limits of Wilmington—in other words, whether any well authenticated cases could be cited in individuals who had not been in Wilmington. Cases had occurred among the refugees at several of the settlements on the Sounds, at various places in the country residences around, at points on the Cape Fear river, above the city of Wilmington, among the camps near and at a distance, and finally, at Smithville, near the mouth of the river. After the most careful and diligent investigation, I could not learn that even a suspicion of its having been propagated among those who had not breathed the tainted air of the infected city, was entertained in regard to any of these places except Smithville. Of the earlier deaths at that place, every one was known to have been in Wilmington, and I learn from Prof. T. G. Prioleau, who spent some weeks there during the greatest prevalence of the disease, that though many of the inhabitants attributed the sickness of their town to communication with Wilmington, (as Wilmington to Nassau) yet, so far as he could learn, every individual attacked in Smithville, had been in Wilmington at some time during the sickly season; and though some few may not have been there for six or eight weeks anterior to their illness, yet most of them had been there much later. It is reasonable to suppose that this statement is in strict accordance with the facts, when we reflect that there was daily intercourse between the places by land and water.

With this historical statement of the circumstances connected with the appearance, extension and limitation of the disease, the reader will be in possession of all the data requisite for forming his own opinion as to its origin.

[TO BE CONCLUDED IN NEXT NUMBER.]

ART. II.—A Case of *Exomphalos*. By H. WYTHE DAVIS, M. D., Richmond, Va.

Teratology presents us with many cases of monstrosity, in which twin fetuses are fused together to a greater or less extent, and more rarely we encounter cases of ectopia, in which

from faulty development of the parietes of the body at the basal line, organs which should be internal are external, and which sometimes, from their bulk, complicate labor. Such examples are to be found in cases of exomphalos, where the liver and intestines have protruded through the umbilicus. Recently I have had the fortune to meet, in private practice, with a case in which nearly the whole of the abdominal parietes were absent, with protrusion of all the abdominal and the chief part of the thoracic viscera. Besides, there were other points of interest in the case, which, to a great extent, involved the life of the mother, not because of the bulk of the displaced abdominal and thoracic viscera of the child, but of the dislocation of the placenta, that organ being implanted partially over the os uteri.

I am desirous to communicate this case to the profession for two reasons; first, because it is important, and attended with danger; and secondly, because I can find no history of a similar deformity of fœtus in any obstetric author I have consulted.

November 22d, 1863—10 o'clock, A. M.—I was hastily sent for to visit Mrs. C—— in her first confinement. On my arrival I found the nurse, as well as the patient, much alarmed, there having occurred a very copious flooding. She was exhausted; pulse 120. I found that she had lost a considerable amount of blood, and the hemorrhage still very profuse. An examination per vaginam revealed the cause of the hemorrhage. The uterus was in a state of inertia, with the placenta partially implanted over the os uteri, which was about the size of a half dollar, but very dilatable. I ordered tincture ergot, which, with my hand in vagina, soon excited uterine action. I detached the placenta from its adhesion as far as I thought it safe for the preservation of the child, and was endeavoring to turn it aside for the descent of the fœtus, when suddenly and unexpectedly it was expelled. There was no longer any hemorrhage, as the fœtus now firmly engaged. I was unable to form a correct diagnosis of the presentation. By the touch I discovered organs (parts) resembling very much the feet, but the entire absence of the genitals and other important points of diagnosis prevented me from forming a positive opinion. The difficulty, too, was increased by a large mass on one surface, resembling, to the touch, the placenta, and on the opposite side a tumor, which felt something like the caput succedaneum. About one o'clock I delivered her of a seven months' fœtus, with the following deformities: The liver and heart were entirely exposed; the lungs partially protruded from under the ribs. The stomach and intestines, preserving their relative position, were covered with a delicate peritoneum. Every portion of the alimentary canal could be distinctly defined. The termination of the rectum was exposed in front as other parts. On the lower part of the anterior surface was an imperfect cavity, which, from its situation and appearance, I would call the bladder; and communicating with this organ was another which, from its internal membrane, bore some resemblance to a uterus, to which, at its inferior part, was attached a body similar to a clitoris. These organs are very imperfectly developed, and

could scarcely be recognized. On the posterior part was spina bifida occupying the lumbar region. The inferior limbs were reversed, the feet and knees looking backwards. Talipes varus of both feet, and ankylosis of the knee and ankle of the left limb. The funis, which measured only four inches, was inserted in the fœtus on the right side, about an inch from the vertebral column. The superior extremities and head were perfect in development.

Considering this a deformity of rare occurrence, I presented it to the Medical College of Virginia, where it may be seen.

ART. III.—*Nelaton's Method of Detecting the Position of the Ball in Gun-Shot Wounds, with Illustrative Cases.*

1.—*Gun-Shot Wound of the Thigh; Ball lodged in the Condyle of the Femur; detected by Nelaton's Probe and Canula Forceps; successful removal.* By Surgeon JAMES BOLTON, Richmond, Va.

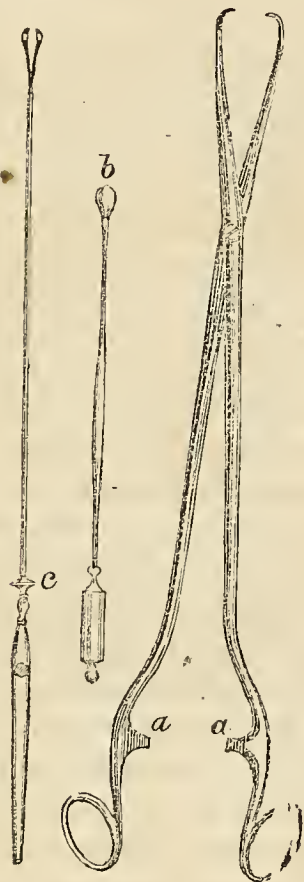
November 3d, 1863.—Arthur Robinson, Rockbridge artillery, aged twenty-one; before enlistment a student; wounded at the battle of Fredericksburg, December 20th, 1862, by the explosion of a shrapnel, a ball entering the inside of the left thigh, just above the capsule of the knee-joint. A cloaca, of oblong form, exists in the femur at the point of entrance of the ball. The femur has been perforated without transverse fracture. A deep sinus exists on the outside of the thigh which discharges profusely. An abscess points on the inside just below the cloaca, and the patient is greatly relieved by opening it and permitting it to discharge. A probe, entering the cloaca, passes obliquely downwards and outwards into the cancellated structure of the outer condyle, but does not detect the site of the ball.

The patient suffers considerably from constitutional irritation, producing loss of flesh, irritable pulse and fever. The knee-joint has not been much affected and its function is almost unimpaired.

Nov. 5th—Operation.—Passed Nelaton's probe through the cloaca, and, after searching the interior of the cavity, at length discovered distinct marks of lead upon the porcelain. Then explored with the canula forceps and nipped off a small piece of lead, having bright surfaces as if freshly cut with a knife. The evidences furnished by these explorations were beautifully distinct and satisfactory. They reminded me of the results of deep-sea soundings, when the lead brings up samples of the debris composing the bed of the sea. The position of the ball having thus been detected with precision, it was seized with the forceps, and, after repeated and powerful efforts, it was dislodged from its bed, where it lay firmly impacted in the cancellated structure of the outer condyle of the femur. On attempting to extract the ball, the cloaca was found to have contracted to such a degree as to bar its exit completely. The aperture was then enlarged by means of a carpenter's brace and counter-sink bit, and was still further enlarged by a chisel and hammer. The ball was then extracted without difficulty.

The operation, including the explorations, occupied an hour and a half, during which time the patient was kept steadily under the influence of ehloroform.

This case is one of unusual interest. During the eleven months which intervened between the receipt of the wound and the operation, the ball had frequently been searched for, but no positive opinion had been arrived at in regard to its exact site; nor do I know any means by which the doubt and obscurity could have been removed, except those used. It was, therefore, a perfect and triumphant success.



The central instrument is a probe, with a white porcelain bulb, *b*. The other detector works by touching the suspected body. The slide, at *c*, is pushed down, when the sharp teeth will bite off a small portion and bring it to the surface. The forceps has a ratchet arrangement, at *a*, to prevent the blades from slipping.

2.—*Letter to the Editor from Surgeon A. Y. P. GARNETT, on the Use of Nelaton's Probe.*

DEAR SIR,—In compliance with your request, I herewith furnish you with a brief statement embracing the results of my experience with the use of Nelaton's probes. These highly useful, but simple and ingenious little instruments, I am informed, were invented by this eminent French surgeon for the purpose of exploring a gun-shot wound received by the notorious Garibaldi at the time of his capture. The ball having buried itself in some portion of the foot, it was found impossible, by any of the ordinary methods of exploration, to distinguish it from the bony structure into which it had penetrated.

In this condition the patient was conveyed to Paris and placed under the professional care of Nelaton, whose operative skill and brilliant genius has achieved for him so widespread and distinguished a reputation.

Through the instrumentality of these probes, which he devised for the occasion, he was enabled to discover the exact locality of the ball and succeeded in removing it from the foot. My attention was first called to these instruments by Surgeon James Bolton, who had procured them from the

office of the Surgeon-General, with the view of exploring a gun-shot wound of the thigh of long standing and involving the femur. All preceding investigations having failed to discover the exact position of the ball and the extent of injury to the bony structure implicated, I assisted in the examination of the case, and was surprised, as well as gratified, at the accuracy with which we detected the ball deeply imbedded in the cancellated structure of the external condyle. The reliability of the instruments was put to a rigid test in this case by the mutually corroborative evidence of each, the porcelain bulb exhibiting clearly the metallic impression, and the canulated nippers unmistakably confirming the diagnosis by bringing away small portions of the metal.

The details of this case, I believe, have been already presented to you by Surgeon Bolton, who had immediate charge of the patient.

Case No. 2 was that of Lieutenant R., who, whilst practising at a pistol gallery in firing with a duelling pistol, accidentally shot himself through the metatarsal bones of the right foot. I was called to this case a short time subsequent to the receipt of the wound, but was unable to discover the position of the ball by the use of the ordinary silver probe or my finger. There was very slight hemorrhage and the patient was put to bed; a full anodyne exhibited and cold cloths applied to the wound. He was soon after conveyed to the residence of Professor Gibson, who was at the time absent from the city. Some three weeks after, at the request of Dr. Gibson, I was present and assisted in a thorough examination of the wound, with the determination, if practicable, of finding and extracting the ball. In passing the probe down the track of the ball, it soon came in contact with a hard substance, which the doctor seemed inclined to believe might be the ball, but which we had no way of distinguishing from the bony structure, unless by cutting down through the soft parts to the point in doubt. My own impression was that the ball had passed through the bony arch of the foot, but, as neither of us had found it practicable to pass the probe through to the soft parts beneath, I was forced to acknowledge the probable fallibility of such a conclusion. It was finally determined to submit the case to the diagnostic elucidation of Nelaton's probes. These having been procured, we first passed down upon the solid body, previously alluded to, the porcelain bulb probe, and making pressure, whilst giving it a rotary motion for several seconds, we removed it, and found that no metallic impression had been left upon it. This operation was repeated with this probe several times and with similar results in each instance. We next tried the nippers, and discovered that they contained, when removed, a small piece of bone. Taking the results of these two examinations in connexion, the one substantiating or verifying the negative evidence of the other, we were forced to adopt the opinion, that there was no ball at that point, but that it had passed through the bony arch of the foot and lodged somewhere in the subjacent tissues. Acting upon this conclusion, although the most careful manipulation had failed to indicate the existence of a foreign body at all, an incision was made through the

soft parts beneath and immediately opposite the wound upon the dorsum of the foot, sufficiently large to admit the introduction of the index-finger, with which the ball was readily felt lying beneath and in contact with the metatarsal bones. It is scarcely necessary to add that the ball was removed and that the patient recovered the entire use of the foot.

Case No. 3 exhibits in perhaps a still more gratifying manner the important and useful agency of these instruments. On the 18th of December, 1863, Mr. C. was brought to the Robertson Hospital of this city suffering with a gun-shot wound of the right thigh, received some six or more months prior to his admission; the ball having entered the external part of the thigh, about the junction of the upper with the middle third, and ranged obliquely inwards and upwards. He stated that he had suffered with severe constitutional symptoms, his general health having undergone a gradual and almost uninterrupted decadence since the receipt of the wound; that the wound had been repeatedly examined by different medical officers, but that on no occasion had any one of them been able to ascertain the existence or position of the ball, which still remained somewhere concealed in the limb. At the time of his entrance into the hospital, his general health had somewhat improved, although he presented a pallid and feeble appearance; he was unable to use the wounded extremity at all, and was scarcely able to get along with the aid of crutches. The wound was still discharging slightly, but presented a small red spot not much larger than a garden pea. There was also an indurated condition of the tissues along the anterior aspect of the limb and somewhat circumscribed, which, though not painful to the touch, had given rise to the suspicion that a large abscess was about to develop itself at that point.

Having procured a long gun-shot probe, I passed it along the track of the ball until it impinged against the upper surface or periphery of the thigh bone. With some difficulty and perseverance I finally succeeded in passing the probe beyond this obstruction, obliquely inwards and upwards, towards the adductor muscles, until it came in contact with a hard, rough body, which seemed to be lying immediately contiguous to the femoral artery. Taking into consideration the history of this case, I was somewhat puzzled to determine whether this body was the ball or a fragment of bone which had been chipped off at the time the wound was inflicted, when it occurred to me that this important problem might at once be solved by the unerring test of Nelaton's probes. I was not disappointed in my anticipated triumph; for, notwithstanding some difficulty experienced in consequence of the insufficient length of the porcelain bulb, I succeeded in obtaining the metallic mark at several different exploratory operations with it. A few days after, assisted by Surgeon Bolton, the patient, having previously been placed under the influence of chloroform, an incision was made, about three inches long, through the external wound, down to the bone, and the track of the ball beyond enlarged with a blunt-pointed bistoury, to avoid the possibility of wounding the femoral artery. Through this, an ordinary pair of bullet forceps

was introduced and the ball extracted. The patient had no bad symptoms whatever; the wound healed almost entirely at the expiration of three weeks, when he was permitted to return to his home on furlough.

The above embraces the only cases in which I have had an opportunity of employing these probes; but, limited as my experience has been, it has demonstrated conclusively to my mind the important advantages secured to the military surgeon by this useful invention, and I take pleasure, as an humble member of our profession, in expressing my high appreciation of its merits, and, at the same time, in acknowledging the obligations under which the profession has been placed to the distinguished inventor.

It is, perhaps, as well that I should state in this connexion, that I have experienced great difficulty in removing from the porcelain bulb the particles of metal, in order that it may be fit for future use—having failed with warm water, soap and brush, acids and other agents. It seems that it will be necessary to subject these metallic particles to some chemical process, by which the metal may be oxidized and formed by the agency of an acid into some of the soluble salts of lead. Of this, however, you are far more competent to judge than I am.

[Nitric acid in excess, or acetic acid will cause oxydation of the metal and the formation of a soluble salt.—Ed.]

ART. IV.—*Ligature of the Right Subclavian Artery.* Reported by Surgeon P. F. BROWNE, Chimborazo, Division No. I.

Private J. B. Click, company "G," 5th Virginia cavalry, was wounded November 8th, 1863, at Brandy Station, by a minie ball, which entered the anterior fold of the right axilla about its middle, ranged through the axillary space, and was removed by counter-incision between the spinal column and the vertebral border of the scapula.

When admitted into the hospital, November 9th, the day after the receipt of his wound, there was no indication of any more serious injury than is usual in flesh wounds. All of his symptoms were favorable, and he rested easy till the fifth day, when he complained of very severe pain, extending from the shoulder to the tips of his fingers. This was accompanied with sleeplessness, a costive state of the bowels and great weakness. He continued suffering more or less in this way till December 3d. A small, hard and circumscribed tumor was then detected, for the first time, under the tendon of the pectoralis major. This tumor increased rapidly in volume.

On the 6th December fluctuation and also pulsation became evident, and, on auscultation, a double sound similar to the bellows' murmur of the heart. No thrill was perceptible either in the tumor or the radial artery. The symptoms were still too obscure to determine accurately its character; and opinion was very much divided. Some maintained strenuously that it was an abscess, from the very feeble pulsation and entire absence of all thrill, and also from the fact that pressure upon the subclavian over the first rib failed to diminish the size of

the tumor. Others were disposed to regard it as an arterio-venous aneurism; and others again asserted that it was an extravasation of blood produced by ulceration of the coats of a vein.

On the 9th December all pulsation in the tumor and in the brachial and radial arteries ceased suddenly. The bellows' murmur also ceased. This was evidently due to great pressure upon the axillary artery by the greatly increased size of the tumor.

An exploring needle was now introduced, and a few drops of grumous blood escaped, but no trace of pus could be detected. The diagnosis being still doubtful, he was suffered to remain until the 15th. A trocar was then introduced, when, as before, dark blood only escaped. It was then decided to ligate the subclavian. The operation was performed on the 16th, by Assistant Surgeon J. C. Baylor, the artery being tied in the third part of its course.

After the application of the ligature, a consultation was held as to the propriety of opening the sac, which, by the great pressure it exerted over the axillary plexus of nerves was rapidly exhausting the patient. It was decided to lay it open by a free incision. This was accordingly done, and an immense clot exposed. On passing the finger into the clot, the artery spouted, and profuse hemorrhage ensued that threatened a speedy termination to life. The clot was quickly turned out and several attempts made to secure the bleeding vessel, but they proved ineffectual, and, as a last resort, the tampon was used. This hemorrhage was thus arrested, but the patient was left in an exceedingly feeble and prostrated condition. Stimulants were freely administered, but he sank rapidly, and died in eighteen hours after the operation. An autopsy held the next day revealed a lesion of the axillary artery just below the origin of the subscapular. The ligature was found firmly fastened around the subclavian, the inner and middle coats of which were divided. But as a week had elapsed since all pulsation had ceased in the tumor and the arteries below it before the operation was performed, time had been given for the establishment of anastomotic communication, and hence the hemorrhage.

[There are some points of great interest in this case: 1st, that so large a diffused aneurism should form, instead of having hemorrhage from the orifices of the wound; 2d, the point where the tumor showed itself; 3d, the patient did not die from recurrent hemorrhage, but the anastomoses, between the ligature and the point of ulceration, permitted the blood to flow directly from the artery.—Ed]

CONFEDERATE STATES HOSPITAL REPORTS.

I.—Report of Cases of Compound Comminuted Fracture of Femur, Chimborazo Hospital, Third Division.

Surgeon E. H. SMITH, in charge.

Case 1.—H. C. Stevenson, company "K," Palmetto Sharpshooters; wounded 27th June, 1862; admitted 29th June, 1862.

Operation.—Circular amputation of "middle-third" of thigh, June 27th; having received compound comminuted

fracture of femur; great laceration of the soft parts; furloughed 4th September.

Case 2.—W. L. Williamson, company "I," 28th Virginia; wounded 27th June, 1862; admitted 28th June, 1862.

Case.—No amputation was performed; but case progressed favorably and was furloughed 30th July, 1862.

Case 3.—C. Brett, company "B," 11th Alabama; wounded 27th June, 1862; admitted 2d July, 1863.

Operation.—Circular amputation of middle-third of thigh, June 28th, having received compound comminuted fracture of femur in lower-third; was transferred to Alabama hospital, July 15th.

Case 4.—J. K. P. Powell, company "C," 31st Georgia; wounded 26th June, 1862; admitted June 30th.

Operation.—Circular amputation of thigh in "middle-third," having received a compound comminuted fracture of knee-joint; was furloughed 26th August.

Case 5.—J. W. Cole, company "G," 28th North Carolina; wounded 27th June, 1862; admitted July 2d.

Operation.—June 28.—Circular amputation of thigh in lower-third, having received a compound comminuted fracture of bones of left leg near knee; was furloughed 19th July.

Case 6.—T. R. Howell, company "C," 4th Alabama; wounded 27th June, 1862; admitted 29th June.

Operation.—Circular amputation of thigh in lower-third, July 2d, having received a compound comminuted fracture of leg, left-tibia; died 4th July, of tetanus.

Case 7.—James A. Gibson, company "F," 7th Virginia; wounded 27th June, 1862; admitted July 1st.

Operation.—Circular amputation of thigh in lower-third, July 3d, having received compound comminuted fracture of knee-joint; was transferred and since died in private quarters.

Case 8.—R. Henderson, company "A," 21st North Carolina; wounded 3d May, 1862; admitted —.

Case.—The ball passed directly through the knee-joint, fracturing the articulating surface of femur with tibia. This case remained under treatment in this hospital for four months, when he was thought sufficiently recovered to be furloughed. He, of course, had an ankylosed joint.

Case 9.—Q. C. Haley, company "K," 38th North Carolina; wounded 2d July, 1863; admitted 16th July.

Case.—Ball passed through left thigh, fracturing bone at the lower-third. Furloughed September, 1863.

Case 10.—M. R. Brooks, company "F," 53d Virginia; wounded 3d July, 1863; admitted 28th September.

Case.—Ball passed through thigh, fracturing bone at lower-third. When he was furloughed he had no use of the leg, and, to all appearance, ankylosis of the knee-joint had taken place.

Case 11.—F. Williams, company "A," 46th North Carolina; wounded December 13, 1862; admitted December 24th.

Case.—Ball passed through thigh, fracturing upper-third of femur. He was treated with Smith's anterior splint, but died March 27th, 1863.

Case 12.—W. H. Harrison, company "A," 41st Virginia; admitted June 1st, 1862.

Case.—Compound comminuted fracture of femur, ball passing through trochanter major. Died 23d June, 1862.

Case 13.—J. W. Colt, company "K," 5th Texas; wounded June, 1862.

Case.—Ball passed through thigh, fracturing upper-third of femur. He was treated with Smith's anterior splint. Furloughed Sept., 1862.

SUMMARY.

Cases,.....	13
Amputations,.....	6
Conservative treatment,.....	7
Knee-joint,.....	3

Original tabulated
for ref.

Thigh,	10
Anchylosis of knee-joint,	2
Furloughed,	8
Transferred,	3
Died,	4
Amputations, 6—Deaths,	2
Conservative surgery, . 7—Deaths,	2

All of the aforementioned patients who have been *furloughed* were transferred to their homes when their speedy recovery was manifest.

II.—*Synopsis of the Consolidated Reports of the Hospitals in the Department of Virginia, from September, 1862, to December, 1863, inclusive.* By Surgeon W. A. CARRINGTON, Medical Director.

Total number admitted	293,165
" " transferred	127,530
" " returned to duty	98,340*
" " furloughed	39,665
" " discharged	4,441†
" " deserted	4,446
" " died	10,248
" " in hospital, January 1, 1864	8,495

* From the total returned to duty, must be deducted 2,465 prisoners returned to quarters—leaving 95,875.

† From the total discharged the service, must be deducted 1,634 prisoners discharged and sent home on parole—leaving 2,807.

Adding up the number accounted for, (returned to duty, furloughed, died, deserted, discharged and on hand,) and adding 9,134, the number transferred to hospitals *out of the State*, we have the true number of cases treated in the Virginia hospitals from September, 1862, to December, 1863, inclusive, 174,767—giving the grand ratio of mortality, 5.86 per centum.

The largest number under treatment at any one time was in January, 1863—18,876.

The smallest population occurred in October, 1863—7,841.

C. S. Medical & Surgical Journal.

RICHMOND, FEBRUARY, 1864.

AYRES & WADE.....PUBLISHERS AND PROPRIETORS.

Association of Army and Navy Surgeons.

This useful organization is increasing in numbers rapidly, and is destined, we hope, to accomplish great results. It represents not only the collected wisdom of the army and navy, but all gentlemen in the profession, who may desire it, can aid in effecting its commendable designs by being elected honorary members.

Hereafter, a regular report of the transactions of the Association will appear in our columns. Among many topics of interest now before it, we will especially mention—

The statistics of secondary hemorrhage—giving the period when it occurred, artery, and result.

Chloroform.

Traumatic aneurism—result of gun-shot wounds.

Tetanus.

Reports on important topics, from standing committees, add interest to the deliberations of this body, and we will especially note Surgeon Read's paper on the use of water dressings in gun-shot wounds, presented at a recent meeting. We cordially desire to see the medical staff and the profession at large united in harmonious action, each striving in its sphere to render the Association a brilliant and permanent success.

Resection at Hip Joint (Read's Case).

The admirable wood cut, from a photograph of the patient whose surgical history we presented in our last issue, will give the reader a clear idea of the condition of the limb after



resection of head of femur This interesting subject, the importance of which can hardly be over-estimated, will be repeatedly a topic for consideration.

[Whilst we go to press, the following case of resection at hip-joint came under our notice. This soldier, an athletic young man, was rapidly walking up the street with the aid alone of his cane, a slight limp, indicating that he had been the

subject of this formidable surgical procedure. We took from him the following sketch of his case :

W. F. Pumphrey, company "H," 1st Virginia infantry, was wounded *four times* at South Mountain—one wound, from a minie ball, fracturing the femur at its neck. He was carried to Frederick, Maryland, and, five weeks afterwards, Surgeon Hewitt, in charge of the United States Hospital at the Convent of Visitation, resected the head of the bone. The patient was taken to Baltimore and treated by Professor Miltenburger, who performed a second resection, taking away a portion of the shaft which had been left behind by Doctor Hewitt. After nine months' confinement to bed, this patient recovered with a shortening of less than *one inch*. He states that at first his leg was too long, but Professors N. R. Smith and Miltenburger applied the anterior splint and the limb gradually shortened.—ED.]

The Medical Department of the Confederate States Army—its relation to the other branches of the service, and the duties of its officers.

Although the organization of the medical department is not as complete as it is believed it could have been, had the ideas and suggestions of its experienced presiding officer met with more favorable consideration, still, in view of the exactness with which its varied duties have been defined and systematized, it may be confidently asserted that, in the full performance of these duties by its members, the objects for which it was instituted have been, if not perfectly, yet, to a very great extent, satisfactorily accomplished.

So far as the definition of their duties is concerned, the officers of the department may be conveniently arranged in two classes :

The first: The more purely professional, in which a larger proportion of the duty is strictly of a professional nature, but in which administrative action enters as a valuable and necessary element, and of which it may indeed become, the more prominent feature.

The second: That class whose special duty is to provide and to dispense to the sick and wounded, medical and hospital supplies. With this class, professional knowledge as to the nature and necessity for these supplies under all circumstances, based upon the general education and experience of a medical officer, may, when compared with the also necessary possession on his part of some business capacity and a moderate degree of information as to the general mercantile laws regulating commercial economy, be affirmed to be of equal relative importance.

It is to the definition of the duties of these two classes of officers that attention will be directed, after brief allusion to the very delicate but responsible relations held by the medical department to all the other co-ordinate branches of the military service.

The strict maintenance of these relations, which are clearly laid down in the Army Regulations, and readily discernible upon its careful perusal, affects not only the department under consideration, but is intimately connected with the integrity and welfare of the service at large.

It is necessary that the medical officer should carefully avoid any encroachment upon the rights, position, or duties of the officers of other branches of the service, his chief and only ambition being the welfare of his patient and the attainment of the highest degree of excellence and merit in his own professional duties, without overstepping their proper limits.

Associated with these officers under all the varied and opposing conditions of ease and hardship, of calm and excitement, of security and peril, it behooves the medical officer, whilst studiously jealous of the rights and privileges of his position, to be ever fully sensible of the necessity for the strict observance of the requirements of regulations and general orders; respectful for and a co-operator in the enforcement of military discipline; careful to avoid a susceptibility to unintentional wrong, and ever mindful, in official intercourse, of the exercise of official respect, courtesy and forbearance.

In his duties to those whose physical sufferings and infirmities it is his special province to administer, often called upon to encounter risks of equal magnitude with those of the soldier, his cherished consolation and his chief incentive to renewed exertion should consist in the well-earned and enviable consciousness of a man of integrity in the full performance of an honorable philanthropic duty; and should it be required of him, as it may be upon the field and under the fire of the enemy, to risk his life, as did the illustrious Percy, to save that of another, he should always approach and enter upon this duty with that calmness, promptitude and decision so necessary to an advantageous application of his professional knowledge, and which the emergencies of the peculiar walk he has chosen have so great a tendency to develop. The unhesitating and manly performance of this duty, if not rewarded by the bestowal of deserved honor and position equal with that of the combatant of the line, must, at least in the hearts of all true patriots, be acknowledged by the universal accord of praise and admiration.

The duties of the medical officers, as herein previously defined, may be further subdivided into those *administrative*, having direction of affairs, and those *executive*.

We propose, in our future issues, to sketch, somewhat in detail, the various and delicate functions of these two classes.

CHRONICLE OF MEDICAL SCIENCE.

ART. I.—*Remarks concerning the Hygiene of Military Hospitals, extracted from a paper read before the Imperial Academy of Medicine at Paris, by M. H. BARON LARREY. Paris, 1862. [Translated from the French and abridged by Professor J. L. CABELL, University of Virginia, Surgeon P. A. C. S.]*

In a few prefatory remarks, the author cites the titles of the various English and French works which either expressly or incidentally treat of the hygiene of hospitals, and, alluding to the incontestible superiority of the English over the French civil hospitals, ascribes this superiority to two predominant conditions of salubrity, namely, the smaller size of English hospitals in general, and a proportionate diminution of the number of beds in each

erroneously stated as an excision of the head of femur. Operation calculated it is a fracture.

ward, with a consequently more expanded distribution of the sick, and a greater amount of cubical feet of air for each patient on the one part, and, on the other hand, a better selected and more varied system of alimentation.

"At the present time there are nearly one hundred military hospitals distributed over France and Algeria. Some of these are called *permanent* hospitals for times of peace—others are termed *temporary*, and are subdivided into hospitals of the first, second and third line, and these, in times of war, ought to be sufficiently near to each other to facilitate their evacuation and prevent the dangers incident to over-crowding. The fatal effects of the absence of such advantages in the casemated hospitals of the closely besieged cities were conspicuously seen on the occasion of the surrender of the citadel of Antwerp."

* * * * *

"All the French military hospitals, except the small establishments of which I do not propose to speak, include severally the various classes of sick and wounded belonging to the army, there being no special hospitals for distinct classes of disease. But, in each hospital, the regulations require that there should be a separation of the *sick* from the *wounded*. Commonly, too, one or two sections are set apart for venereal cases, isolated wards for patients affected with scabies, others for small pox patients, and private rooms for the gravest cases of fever, &c. Such an arrangement seems appropriate and beneficial, as having a tendency to facilitate the execution of the regular duties of hospital service, to favor disciplinary supervision, and to promote the salubrity of the ward."

In proof and illustration of the proposition, that a hospital, presenting every other condition of salubrity may be exposed to all the dangers of the most malignant hospital epidemics, the author, after referring to the excellent sanitary condition of the military hospital of Val-de-Grace, at Paris, before the occupation of that city by the allies in 1814, states that, on that occasion, this, as well as the other hospitals, were over-crowded, and hospital gangrene prevailed to such an extent, that nearly every case of amputation proved fatal. Referring to another military hospital in Paris (Gras-Caillou), and adverting to the favorable sanitary influences by which it was surrounded and which was exemplified by the rapid cure of the wounded from the three days' fight of July, 1830, he proceeds to say that "these advantages could not, however, over-ride the opposite influences springing from an accumulation of the sick, as has been recently shown when the board of health found it necessary to propose to the minister of war appropriate remedial measures—namely, the discharge of all the convalescent patients, the reduction of the number of beds and the construction of other hospitals," which measures were promptly taken with the most beneficial results.

"Each army corps possesses an infirmary, in which are treated all benignant affections or diseases of so mild a character as not to require admission into a regular hospital. A two-fold advantage results from this place. In the first place, this class of patients are thereby exempted from exposure to the *nosocomial* effluvia of the hospital, and, on the other hand, the hospitals are preserved from a dangerous accumulation of the sick."

[N. B. At the general hospital, Charlottesville, this principle has been and is now carried out by permitting quite a large proportion of convalescing patients to remain in *private quarters*, reporting in person every few days. With proper care on the part of the surgeon in charge, no evil can result, but only unmixed good. If elsewhere the system works badly through a want of proper attention on the part of the surgeon, he should be held responsible, and not the system abandoned. If the permit in each case designates the particular temporary residence of the patient, and its validity be limited to a specified number of days, it will be very easy for the surgeon to report to the provost marshal or enrolling

officer, all who fail to report at the proper time. I find the system to work exceedingly well, though, of course, it gives the surgeon some trouble.]

Adverting to the admirable naval hospitals of France, the author proceeds to say—"That for them, as well as for army hospitals, and indeed for all hospitals, the question which overrides all others, and which ought always to engage the earnest attention of the administrative authorities, is that of *overcrowding* the wards. We may, in the most manifest manner, produce argument, diminish or suppress its effects, by increasing or diminishing the number of sick in a given ward. Our learned and modest colleague, M. Ry-nard, inspector-general of the sanitary service of the navy, assures me that he has many times in his own experience signalized these conclusive results."

"The application of the principal rules of hygiene to military hospitals presents a question of some complexity, which, however, may be greatly simplified by disengaging it from all accessory elements.

"The location of these hospitals outside of the great centres of population, is the first safeguard, but not an infallible guarantee of their salubrity, while it serves at the same time to preserve each locality from being so many foci of infection." [The author here insists upon the importance of appropriate means of safe and comfortable transportation for the sick.] In France, "the selection of hospital sites is determined by a mixed commission, composed of officers of the line, engineers, members of the medical staff, and of the board of health. In choosing a site, the following conditions are observed: remoteness from insalubrious spots, elevation of ground, suitable exposure to the sun, proximity to streams of water, vicinity to surrounding groves," &c. It is true, indeed, that we do not always find a combination of all such advantages in hospitals whose ordinary sanitary condition is yet satisfactory; as for example, in certain civil hospitals of London, situated in narrow streets of populous districts; but if an epidemic should arise, the patients would, doubtless, be decimated. It is, therefore, much better to provide, in advance, all the important conditions of salubrity.

The construction of hospitals has a primary importance, regard being had to the choice of the particular spot, to the extent and height of the edifices, and to the arrangement of the several parts of the general plan. But the best contrived construction loses all its advantages as soon as the wards are over-crowded, or even filled with sick, and the extent of the danger necessarily increases with the increasing proportions of the structure. How often has this fact been verified in such large establishments as the Hotel-Dieu, of Paris, and that of Lyons!

The square form of the old military hospitals constructed by Vauban, offering certain advantages in respect to the facilities of supervision and administrative service, is unfavorable for ventilation and salubrity. The tendency at present is to supersede this kind of structure by the more general system of isolated pavilions after the plan of Tenon. The relative separation of the wards prevents the direct propagation of miasmata, and should permit the circumscription, to a certain degree, of the focus of an epidemic. This has been beneficially accomplished at the Val-de-Grace in one of the new pavilions in which, at the date of the latest epidemics, all the cholera patients were collected, and since that period all the sick returning from the Crimea who presented typhoid symptoms.

The height of hospital structures should not exceed two stories, or even one, whenever the price of the ground and the cost of the construction will permit. The temporary army hospitals, made of wood, have but one story near the ground. Such is the construction of the Dey's Hospital, at Algiers, which has been occupied for more than thirty years as a temporary hospital, and its sanitary condition is excellent. The Camp Hospital, at Chalons, and the field hospitals generally, are constructed on this plan, and not-

withstanding the necessary lack of some of the important hygienic conditions, the results obtained by means of this simple advantage are truly surprising. The advantages resulting from the superposition of successive stories, have been often insisted upon by Hunter, Coste, Desgenettis, Pastorit and Villirne. It appears, in fact, that a hurtful influence proceeds from the lower to the higher stories. M. Malgaigne has cited a remark of M. Desgenettis, ascribing to the quartering of his patients on the first floor the better success which he had experienced in comparison with a colleague, whose wards were on a higher story. If the wards for the sick ought to be thus separated from each other, it is of equal, or greater importance, that they should be separated from the hospital dependencies, such as the dispensary, the kitchens, the laundry, the bath-house, and the offices generally.

But the proximity of the latrines is inevitable, and often very deleterious. Of all the dependencies of a hospital, this presents the greatest difficulty for its practical adjustment. "In this matter, public hygiene is still behind private hygiene," as has been observed by M. Bouchardat in his lectures on Hygiene. [The author does not suggest any mode of getting rid of the deposits. If a stream of running water can be had, all the difficulties of the problem will be readily solved. Fresh water immediately deodorizes faecal excrements, and it is only necessary to dam up a portion of the stream immediately above the latrines and to open the flood-gate occasionally, say twice a day, to carry off all adhering masses. In the absence of this inestimable convenience of a running stream, the most effective plan is to have the latrines policed twice a day, and to bury the deposits.]

The staircases and passages of hospitals should be wide and well lighted, in order to facilitate access to the wards at all hours, and to permit free manipulation of the litters.

The arrangement of the wards is one of the most essential points of the question of hospital hygiene. The old system of very capacious wards, admitting many rows of beds pressed closely together, might satisfy spectators, or subserve the convenience of the hospital attendants, but must assuredly compromise the safety of the sick and the responsibility of the surgeons. The appropriation of each building to a limited number of apartments, and above all, the requirement of a maximum limitation of the number of beds for each apartment, cannot be too earnestly recommended to the higher authorities as the best means of ameliorating the most defective hospitals, of perfecting those constructed on the best plan, and of preserving them from the dangers of over-crowding with a certain guaranty of a diminished mortality. The capacity of the apartments might be limited to ten, fifteen, or twenty beds, or might be extended to thirty or forty, but under no circumstances should exceed fifty beds. The separation of such wards by passages, vestibules, or private chambers reserved for cases of peculiar gravity, furnishes conditions favorable to salubrity by establishing the independence of the different services. In all military hospitals, a positive regulation should require the separation of three classes of patients: the sick, or those affected with febrile diseases, and the wounded, and the patients having venereal diseases. A secondary obligation prescribes the isolation of eruptive and contagious diseases, such as small pox. [In this country, where revaccination, at stated intervals, is not commonly practised, the obligation to isolate small pox patients is felt to be of primary importance.]

At the present day, hospitals are never built as heretofore, with immense wards communicating directly with each other, thus amalgamating their miasmata at the expense of the sick.

The cubical dimensions of the wards, and the proportion to the bed, constitute a most essential element for the prevention of the evils of over-crowding. The proper allowance should never be diminished under the pretext of accommodating a larger number of sick during the prevalence of epidemics, since this would be

equivalent to augmenting the chances of mortality. It is the cubical capacity, and not the superficial area, which ought to determine the number of beds to be placed in each ward. Their cubical capacity should be *at least* thirty metres (*about 1060 cubical feet*) to each bed *as a minimum*, and more when ever it can be obtained.— [An interesting and instructive paper on the "site and construction of hospitals" in the British and Foreign Medico-Chirurgical Review, for April, 1860, has this statement: "The cubical space for each patient in this climate has been fixed by European sanitary science at not less than *fifteen hundred feet*."]]

"The space between the beds in the same row, should be at least three feet in width, and that between the rows should be from six to nine feet. Ampler dimensions will even be required in the surgical wards.

"The regular and successive evacuation of the wards of a military hospital is of the first importance. It reduces for the time the number of the sick, and furnishes an opportunity for disinfecting and cleansing the wards in succession by white-washing and other suitable means."

The author abstains from any formal notice of the beneficial influences of light, heat and ventilation, on the salubrity of hospitals, the preservation of the lives of the patients, and the curability of their diseases, and of the means of heating and ventilating hospital-wards, in view of the facts that these questions had been fully discussed by M. Bondin in the 47th volume of the "Annals d'Hygiene Publique." He remarks, however, that of all the ingenious novel proposals for improving the ventilation of hospitals, "none have thus far seemed to exert any sensible influence on the diminution of mortality." He concludes, therefore, that natural aëration by means of numerous and opposite windows, as opposed to artificial means of forcing the fresh air into the wards, remains the most simple and the most convenient of all methods yet devised. He enjoins the necessity of moveable openings at the upper part of the windows, which may be obtained by making the upper sash descend by means of cords and pulleys. He recognizes the extreme difficulty in practice of regulating the ventilation in winter, so as to ensure adequate purity of air on the one hand, and protection of the patients from cold draughts on the other. No other duty of the ward-master requires more careful attention and discriminating judgment.

[TO BE CONCLUDED IN NEXT NUMBER.]

ART. II.—*Hydrocyanic Acid in the Treatment of Insanity.* By KENNETH MCLEOD, M. D.

Among many trials of the efficacy of particular medicinal agents and modes of remedial treatment in particular forms of mental derangement, which I have instituted since coming into asylum practice, I have made a careful series of experiments into the effect of hydrocyanic acid in allaying cerebral irritation and excitement. The results which I have obtained are, upon the whole, so satisfactory, that although I should desiderate a more extended and minute induction for the sake of indicating exactly the cases and circumstances in which it is most suitable, still I consider it better to give them publicity, in order that the use of the drug, if it is as valuable and effectual as I believe it to be, may be extended, and that its merits and defects may become a subject of inquiry at the hands of others. As far as I have been able to learn by reading and personally inquiring into the practice of other asylums, though prussic acid is, in over-dose, the cause of such immediate and striking effects upon the brain, its moderate use has not been applied to any form of disease of that organ whose activities it is capable of extinguishing in less than minute.

Aware of the fallacies which are so liable to complicate investigations into the modes of action of therapeutical agents, and to

cripple, nullify, or falsify results, I have with care attempted to guard against them. The most common sources of fallacy are—

1. The natural course and resolution of the disease after removal of a cause or causes, or the completion of the changes which constitute its term.

2. The effects of regimen, diet, moral treatment, and other circumstances operating simultaneously with the administration of the remedy as causes in a course of events.

3. The effect of other remedial agents given at the same time or previously.

4. The tendency to anticipate results and to "explicate appearances—not as they are, but as the observer pleases."

I have endeavored to obviate these, which attach largely to a practice in insanity, by—1st. Estimating the probable issue from a consideration of existing circumstances and symptoms, and comparison with other similar cases. 2d. Making due allowance for the effect of other means in existence as causes of cure. 3d. Administering the drug void of combination. And, 4th. Cultivating a salutary scepticism as to results, and taking rather the unsolicited testimony of other observers than depending solely on my own observation.

The evidence which I possess of its action has been gained from—1. Personal observation, as constant and close as possible. 2. The observations of attendants upon the insane. 3. The statements of other patients; and, 4. The admission, in several cases, of the patients themselves.

The trials have extended over six months, and the number of patients who have for a longer or shorter period been under treatment with it exceeds forty. I shall, in what follows, consider in order—1. The circumstances and cases in which the drug has been administered. 2. The effects of the administration. 3. The preparation, dose, and mode of administration employed; and 4. The indications derived from my experience of it, of its further use or trial; and give, shortly, a few of the most remarkable illustrative cases.

1. The feature of symptom which has in every case indicated the administration of the drug as a reputed calmative, is excitement—the manifested excess of cerebral activity which almost invariably accompanies, or assists in constituting, most forms of acute insanity, however caused or conditioned.

This increase of manifested energy may consist in an excessive activity of any or all of the representative faculties, gesture, feature, voice, or an intensified action of the brain itself, resulting in a morbid rapidity of ideation.

A simple increase of the evolution of nerve force, causing a more rapid rate of brain action and greater intensity of representation in the form of muscular acts, when excited by sufficient motive, and devoted to any end or a rational end, is a phenomenon of sound psychological action, and is manifested as emotion, passion, etc.; but when it exists in excess, without an adequate motive or any motive at all, and is not, consequently, devoted to any rational end or any end at all, it constitutes a pathological fact of the same sort, as every other pathological action or phenomenon characterised by excessive activity in a particular direction. Beyond recognising this excessive and senseless cerebral vigor, or hypernoia, as it may be appropriately termed, as a simple, ascertained pathological fact, we cannot go; and, admitting it as such, we instinctively look for its conditions and causes, and, in the way of treatment, strive either to remove the cause, or introduce new causes—the knowledge of the causes and conditions of the pathological manifestation, as well as the causes and conditions which will remove it, being matter for investigation.

The *hypernoia* may co-exist with more or less mental derangement. It may be an utter delirium, in which reason and design are totally wanting, or may exist along with incoherence and delusions of all sorts and degrees, and with one or several active propensities, erotic,

destructive, dirty, malevolent, homicidal, suicidal, etc. It forms the element of acuteness in many different forms of insanity, is the main object of the exhibition of medicines and plans of remedial treatment, morphia, antimony, warm bath, douche, emetic, purge, etc. Its degree measures alike the gravity of the disease, and the success of treatment; its abatement is a token of amelioration, and removal a triumph; the treatment of the faculty disorganization or *paranoia* being subsequently accomplished mainly by tonic, dietetic, and moral means.

The particular forms of insanity in which I have employed this remedy are—

	Cases.
1. Mania, acute.....	13
2. " chronic.....	2
3. " chronic, acute paroxysms.....	2
4. " menstrual.....	2
5. " puerperal.....	2
6. " recurrent.....	1
7. " epileptic.....	2
8. " epileptic, with menstrual excitement.....	2
9. " with hemiplegia.....	2
10. " with general paralysis.....	5
11. " with chronic hydrocephalus.....	1
12. Melancholia, acute.....	3
13. " chronic, with acute paroxysms.....	3

40

II. The effect in every case has been very manifest. It has been almost purely psychal, consisting in a very remarkable, sudden, or gradual cessation of hypernoetic manifestations, with or without the induction of sleep. While its repeated exhibition has never failed to have some calmative effect, this has varied, according to the circumstances of the case, and has occurred in all degrees from the gradual, slight, and temporary, to the immediate, absolute, and permanent.

1. In cases of mania and melancholia of great severity and long duration, with organic disease of the brain and body, its calmative action has been more slowly produced, with more difficulty maintained, more evanescent and futile.

2. In recent cases of mania and melancholia, where no grave structural change exists, and the morbid condition has not become so stereotyped by constant repetition of similar changes, its exhibition has been followed by an immediate and sustained change for the better.

3. In the violent, paroxysmal mania of epilepsy and general paresis, in menstrual mania, and acute melancholic paroxysms, a single administration, or a few full doses at short intervals, have effectually dispelled the paroxysm.

The effect is thus of two sorts: 1. Immediate. In a few minutes, one to five generally, a patient who has just been shouting, chattering, dancing, swearing, thumping, &c., &c., becomes settled and quiet, sits upon a seat, and perhaps falls into a sound sleep. And 2, gradual; the patient becoming, as the hypernoia is thus, from time to time, warded off, more rational, companionable, and useful. While changes in psychal manifestation are thus very obvious and striking, observed and appreciated by attendants, and confessed to by patients themselves, who, on being questioned, admit the calmative action, and conferred power of self-control, concomitant physical phenomena are very obscure or wanting. Only in two cases have I observed a very decided change in the character of the pulse, which became slower, weaker, and, in one, slightly irregular; but this is probably owing to the difficulty of accurately observing it in such circumstances. In two other cases in which a slight over-dose was given, a semi-comatose condition was induced, with complete adynamia, partial ptosis, the accumulation of frothy saliva, pallor, slight affection of breathing and pulse, phenomena almost exactly resembling those immediately preceding an epileptic paroxysm. In a few cases the subjective sensations were described as—1. Slight transient vertigo; 2. Slight nausea and a peculiar

constrictive feeling at the back of the throat; 3. An unwillingness and almost inability to energise in any way, and sometimes a desire to recline. These feelings were experienced in a few minutes after the dose was taken.

The result of administration in the forty cases in which I have noted the effect, may be represented as follows:

1. Slight, or well marked temporary amelioration; without any decided effect on the cause of the disease. This result I have observed in ten cases: one of puerperal mania, in which the dose was probably insufficient; one of melancholia, in which the treatment was altered; one of menstrual mania; three of acute mania of long standing and great severity, ending in exhaustion and death, and resisting every mode and plan of treatment; two in recent mania, the effect being sustained and cure completed by other means; one in acute mania, when its administration was not sustained; and one in an acute paroxysm of chronic mania.

Even in these cases the effect has been most beneficial, the patient becoming very much more manageable, giving over violence, noise, excitement, stripping, restlessness, etc., and becoming more amenable to moral and dietetic management.

2. A more decided and permanent effect, the disease being still stationary or progressive. Of this class I have noted nineteen; five general paralytics, in whom, while the morbid excitement has been vastly abated or expelled, the disease has progressed to its fatal termination; five chronic maniacs, in whom an inter-current acute paroxysm was effectually dispelled; three melancholics, in whom acute manifestations were permanently removed; one case of acute dementia, in which excessive hypernoia was immediately arrested; two epileptics, in whom a paroxysm of excitement was summarily dismissed; two cases of epilepsy with menstrual excitement, in which the contrast of duration with former attack was most striking; one case of hysterical mania, in which the disease oscillated from an extreme of hypernoia to an extreme of hyponoia; one case of puerperal mania, in which rest and sleep were induced after other measures had signally failed; one case of mania with hemiplegia, in which an intercurrent excitement was disposed of; and one case of mania with chronic hydrocephalus, where a change in conduct and demeanor was very evident.

In all the cases the benefit conferred has been simply obtained, satisfactorily established, and duly appreciated by the attendants and patient.

3. Cases in which the drug has been a factor, and a very main one, in rapid restoration to reason. The cases of this class have been eight in number: six of acute mania, and two of acute melancholia. I shall append some of the most interesting cases of each class.

III. The preparation which I have employed in every case has been Scheele's dilute acid, which I have found remarkably uniform and convenient.

The dose has varied from 5 to 6 minims. Beyond that, disagreeable effects are apt to occur; 5 minims is the most convenient dose, and if the effect is not promptly established, a repetition every quarter of an hour effectually secures it. The effect is rather evanescent, and has been observed in some cases to disappear within an hour; but if a slight degree of hypernoia recurs, a subsequent administration is apt to have a more potent effect, in consequence of a prior. The interval may vary according to the nature and exigencies of the case, and the effect produced. Short at first, until an effect is produced (5 to 15 minutes), it may be prolonged after the excitement has disappeared (to one or two hours). It may, in many cases, be left, within limits, to the discretion of an intelligent attendant.

The only modes of administration I have employed have been mixture and subcutaneous injection. The simplest and best menstruum is water, and 5 minims may be easily and safely introduced beneath the skin, combined with 30 minims of water, by means of

Wood's syringe, when the patient resists all other means. Of its application to the extensive pulmonary mucous membrane, by means of pulverization and inhalation, I have no experience; but I should anticipate interesting and important results from such a method of administering it, and other medicines, in insanity.

IV. The advantages of the drug, in comparison with other calmatives and hypnotics, are:—1. The rapidity, certainty, and simplicity of its effects. 2. Its manageability and freedom from any cumulative property. 3. The absence of any disagreeable, concomitant, or consequent physical disturbance, which most other analogous modes of remedial treatment possess. 4. Its small bulk, want of color, and miscibility. 5. Its want of repulsive smell and taste—a very great virtue with the insane, who are very apt to rebel against medicines. 6. Its not impairing appetite and digestion, but rather improving both.

On the whole, I should recommend and urge the adoption of the drug in every case of insanity with hypernoia, as an empirical antagonist to that pathological phenomenon, combining or exhibiting it simultaneously with any other remedy or plan of treatment which an ascertained pathological condition may demand. Simply as a "quietener" it has its merits, proving an invaluable auxiliary to the moral management of a ward generally, or the patient in particular. Very often, I have heard the attendants express their sense of the great value of "the medicine" as completely altering the character of their gallery and the conduct of their patients—benefiting the latter, and assisting themselves in the performance of their duties. But, in acute cases of mania and melancholia, and in maniacal and melancholic paroxysms, I attach a much higher value to it, and should more strongly advise its trial, as, from the experience I have had, I feel convinced of its potency and efficacy. I have no doubt that it has the power promptly of staying cases running on to chronic insanity on the one hand, or exhaustion and death on the other, and of obtaining, simply and satisfactorily, results which are at present aimed and arrived at by boiling a patient in hot baths, half drowning him in douches, narcotizing with opium or morphia, nauseating with tartar emetic, exhausting with purging, roasting with blister, or debilitating with lancet, leech, or cup.—*Medical Times and Gazette*, 1863.

ART. III.—*French Medical News.*

PARIS, March 3, 1863.

Periodical literature has had a striking influence upon the progress of medical science in France. It is carried on with unceasing energy, and employs the time and powers of some of the most intellectual men in Europe. No less than forty journals appear at stated intervals; there are some that are published as often as three times in each week, and they are all fully supported by the reading medical world. "The appetite seems to increase by what it feeds upon." Scarcely is there a person interested in the cultivation of the healing art that does not see at least two periodicals weekly. They are found equally necessary for the student and for the experienced practitioner; and no one can feel that he keeps pace with the march of science if he does not know what is contained in their prolific pages. The journals in Paris are, for the most part, either three times a week or weekly; and whilst some of them have their *specialité*, and are devoted to a single branch of the profession, others embrace all its parts, give outlines of lectures, hospital cases, clinical observations, transactions of the medical societies, and reviews of the works that are likely to excite much interest.

La Gazette des Hôpitaux makes its appearance three times in each week, under the careful superintendence of Dr. Brochen; it is deservedly a favorite with the medical world, and furnishes a faithful picture of all that is passing. *L'Union Médicale* likewise gives three times in each week a mass of scientific and practical observations;

its chief editor, M. Amadee Latour, pupils his task with great care and zeal.

The *Gazette Medicale* is superintended by Dr. Jules Guerin, who offers the result of his experience and his acquaintance with the different branches of knowledge. This is brought out only once a week, as well as the *Gazette Hebdomadaire*, which is much esteemed, and its editor, Dr. Dechambre, is considered as admirably adapted for the task he has undertaken. Dr. Brown-Sequard superintends the *Journal de Physiologie*, which appears twice in each month. The *Journal des Connaissances Medicales* is circulated every ten days.

Each branch has its journal. Psychology and mental alienation have their exponents; Dr. Baillauger, and Dr. Delaseauve superintend these respective periodicals. Dental Surgery, Ophthalmology, and even Homœopathy find the means of giving publicity, either weekly or monthly, to the subjects to which they are devoted.

The medical societies are occupied in debating upon a question rather relating to the moral duties of the physician than to science. It has undergone not only warm discussion within the walls of the schools, but is filling long columns in the journals. This question is: "Ought a physician to disclose to any individual the malady which calls for his attendance upon a patient." The law in France, as laid down in the *Code Napoleon*, formally forbids a medical man to communicate to any one the professional secrets confided to him. But, may not there be sufficient reason for him, according to his judgment, to commit a breach of this law? A case has been put which has brought into the field some warm advocates for a frank disclosure under certain circumstances on the part of the physician.

A young gentleman had paid his addresses to a lady of delicate health, and had been accepted by the family; it, however, came to the ears of the young lady's father that her betrothed had been for some time under the care of a practitioner of considerable eminence, and he had heard such hints thrown out that he had judged it proper to call upon the physician with the hope of learning from him whether his intended son-in-law had any complaint that might prove injurious to his daughter, who was herself somewhat of an invalid. He was courteously received by the Doctor, who, however, positively refused to give the slightest information as to the state of the youth, his patient. He declared that it would be a breach of confidence which no circumstance could warrant. The father dwelt upon the necessity of arriving at truth, and stated that the approaching marriage of his daughter filled him with anxiety from what he had accidentally heard. He pleaded in vain; not a syllable was to be obtained from which he could glean any shadow of information. The marriage took place and fearful were the results. The young wife was affected with secondary syphilitic symptoms, which, from her ignorance and her delicacy, assumed a most formidable character, she not disclosing her state to anybody. An infected infant is brought into the world; the mother, always delicate, dies, and a tragedy of a most afflicting character supervened, in consequence, as it has been alleged, of the improper silence of the medical man. Arguments on both sides have been heard. At two of the medical societies, the opinion has been given by large majorities that one of the first duties imposed upon the doctor is silence. The oath of Hippocrates to that effect is quoted, and there seems to be a disposition generally to consider that the physician is never warranted to give information as to the state of those consigned to his care. The words of the law which appear in the penal code are: "Physicians and other persons who by profession are depositories of secrets confided to them, and who, unless called on by law, shall reveal such secrets, shall be punished by imprisonment from one to six months, and by fine from 100 to 500 francs."

Dr. Civiale has delivered his annual retrospect of his practice in calculous disease within the last year. He has had 69 cases of stone in the bladder for treatment—66 men, 2 women, and 1 child; 45 of these were private patients, 24 were at the hospital; 61 had stone for the first time, 8 had already been subject to the disease; 58 of

these cases were operated upon, 45 by lithotrity; 1 fatal occurred only. There were 8 cases relieved only, 10 were submitted to the ordinary operation, of which 3 were cured, 2 relieved, and 5 died; 3 have been operated upon by joining together the two methods of lithotrity and cutting; of these 2 were cured, the third has irritable bladder; 11 did not undergo any operation. An analysis of this *compte rendu* would occupy more space in the *Medical Times and Gazette* than could be given to it, but it would prove highly interesting; it is to be found in the *Gazette des Hopitaux*, in the number published 27th of the last month.

Syphilographie has had an addition in a memoir by Dr. Amedee, Paris, in which he points out the advantage of filiform setons in suppurating buboes.—*Medical Times and Gazette*.

ART. IV.—*Albuminous Urine in Puerperal Convulsions*. By F. H. RAMSBOTHAM, M. D.

This eminent accoucheur, in a recent communication to the *Medical Times and Gazette*, says: "Shortly before this time, October, 1843, my attention was directed to the fact of the urine in women who became the subjects of convulsions in labor containing more or less albumen, sometimes in considerable quantity; and I have found in my own practice this to be the case in about every five cases out of six where I have been able to make the observation. But, as the patient is recovering, it gradually becomes less and less, and it has almost entirely disappeared at the end of twelve or fourteen days, sometimes earlier, though occasionally it persists for a longer time. Some pathologists imagine that the presence of albumen, under such circumstances, indicates granular disease of the kidneys, and therefore attribute the convulsive seizures to those bodies having become the seat of that particular organic change. On the contrary, we are told by M. Blot and others that the excretion of albumen by the kidneys in small quantity is not an unusual occurrence in pregnant women. If organic disease of the kidneys was present in all cases of puerperal convulsions, how could we account for the disappearance of the albumen so soon after delivery—we should expect it to remain permanently. The following is the explanation which has occurred to my own mind: we know that the fibrine is in excess in the blood of pregnant women, we have reason to believe that the albumen is in excess also; and from the observations of M. Blot, that a part of that excess is got rid of by the kidneys, we may easily imagine that if there is a much greater quantity formed than healthy blood ought to contain, the superfluous albumen may excite the apoplectic seizure which is the occasion of the fits; and that thus the connexion between albuminous urine and puerperal convulsions as cause and effect is manifest.

ART. V.—*The Treatment of the Local Effects of Cold*. By Dr. KRAJEWSKI, of Krubieszon.

Cold water and ice play an important part in the treatment of the local injuries induced by intense cold. Whether in the case of mere chilblains in the first or second degree, or real congelation with a livid and cadaverous hue of the affected parts, it is always advisable to begin by frictions with snow, ice or iced-water. The cold application should be continued for several days, and changed twice in twenty hours. In cases in which the cold water appears to be insufficient in itself, its application, perseveringly continued, seems to increase the remedial power of other means which experience points out as the most efficacious.

Among these means, Dr. Krajewski especially recommends the following:

1. Rust's mixture, composed of equal quantities of nitric acid and cinnamon water. The parts affected are painted over with

this mixture, an application to be renewed every evening, care being taken to replace it in the day by cold water dressings. This system generally affects a cure of chilblains in the space of twelve days or a fortnight.

2. Jacobi's mixture, composed of equal parts of camphorated brandy and tincture of saffron. This mixture was in great repute in 1812, after the disasters of the Russian campaign. The parts covered with chilblains should be washed several times a day, or be covered with compresses saturated in this fluid.

3. The use of concentrated solution of nitrate of silver (8 gr. for 2½ dr. water), which is strongly recommended by Italian physicians, yielded in the hands of Dr. Krajewski instances of frequent success.

4. Dr. Fitz-Patrick's mixture, consisting of 2½ dr. tincture of iodine and of ½ oz. of soap liniment, applied every evening to the injured parts, after previous lotions in cold water, is another very efficient remedy for chilblains.

5. Glycerine, recently recommended by a physician of Odessa, afforded Dr. Krajewski excellent results, even for ulcerations of parts frozen.

6. Collodion, spread daily over the affected parts, also appears among the remedies from which good effects may be expected in chilblains.

Notwithstanding the use of the different substances we have mentioned, Dr. Krajewski lays much stress on the importance of superintending the general condition of the system. The bad constitution of the patients too often renders the different degrees of chilblain most difficult of cure, and may require the internal use of preparations of iron, cinchona, bitters, anti-scorbutics, etc.

In cases of mortification from cold, Dr. Krajewski advises, according to the precepts generally received, waiting for the appearance of the line of demarcation which indicates the separation of the dead from the living parts, before proceeding to amputation. When two limbs have mortified from freezing, this practitioner unhesitatingly prefers simultaneous to successive amputation of both, and in support of his opinion adduces several cases from the practice of Professors Lebrun of Warsaw, and Zablocki and Inoziemcow of Moscow.

Amputation of a limb at a time, and awaiting the more or less complete cicatrization of the first before attempting the second operation, is a practice which exposes the patient to two dangers at once: phlebitis in the first place, and the absorption of the gangrenous matter, which sometimes forms vast deposits in the midst of the mortified part.

Simultaneous amputation of both limbs occasions no greater reaction than the removal of one, and the general condition of the patients necessarily improves more rapidly than if one limb only had been amputated, leaving permanently in the other the source of infection, which increases the difficulty of the recovery of strength, and may even react unfavorably on the healing of the stump.

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CIRCULAR.

SURGEON-GENERAL'S OFFICE,
RICHMOND, Oct. 31, 1863.

The following Prospectus meets with the hearty approval of the Surgeon-General, and the medical officers of the Confederate States service are earnestly requested to co-operate in the undertaking, and to forward their names, enclosing subscriptions, with as little delay as practicable.

S. P. MOORE, Surgeon-General.

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PROSPECTUS.

It is proposed to commence the publication of a medical periodical in this city on the 1st of January next, and the co-operation of the army and navy medical staff, and of the profession at large, is respectfully solicited.

The responsible position which the Southern medical profession holds before the country demands that there should be some exponent of its unprecedented efforts, under the most adverse circumstances, during this war. Having free access to the reports and archives of the Medical Department, and acting in concert with the Association of Army and Navy Surgeons, this journal purposes to be the impartial representative of the profession, by collecting and elaborating the valuable results of its labors. Through this medium also we can be brought into communication with our brethren in other countries, and a chronicle of medical science, carefully collated from recent English and Continental periodicals, will be a leading feature. In short, no effort will be spared by its conductors to lay the foundation of a Southern Medical Literature on a firm and enduring basis.

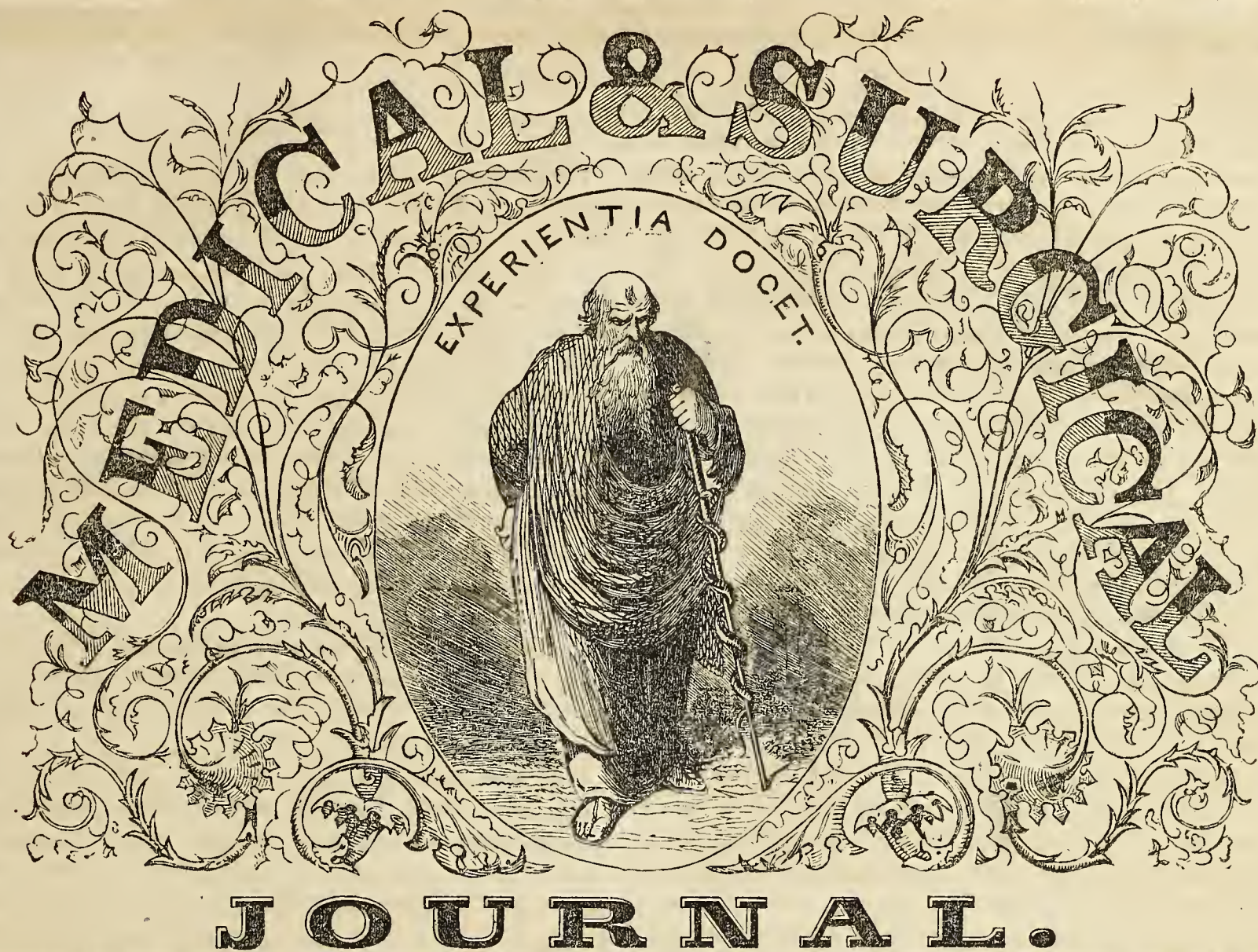
The CONFEDERATE STATES MEDICAL AND SURGICAL JOURNAL will be published monthly, in quarto form, and issued regularly to subscribers, who have paid in advance, at TEN DOLLARS A YEAR.

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CONFEDERATE STATES



VOL. I.

RICHMOND, MARCH, 1864.

No. 3.

ORIGINAL COMMUNICATIONS.

ART. I.—*Report on the Yellow Fever Epidemic at Wilmington, N. C., in the Autumn of 1862.* By WM. T. WRAGG, Surgeon P. A. C. S. (Concluded.)

Symptoms.

The symptoms presented in this epidemic did not differ from those usually described. The attack usually came on suddenly, though occasionally the patient was uncomfortable and unwell for several days before the actual invasion. A chill, in some cases amounting to an actual ague, generally indicated the onset. Pain in the head, back, loins and limbs immediately followed, and very soon there was a feeling of soreness all over the abdomen, from the diaphragm to the pubis. Nausea and vomiting were often attendant upon this stage of the disease, when the contents of the stomach, usually undigested, and then bilious matter, were freely discharged. Fever at once set in, when the heat of the skin was usually intense, though not always dry, for sweating was often profuse, without abating the intenseness of the burning, acrid heat. The pulse was generally frequent, full, hard and burning; sometimes so rapid as to reach 120 or 130 beats in the minute. The headache and pain in the back soon became

intense and often unbearable. The face was flushed, and the eyes red and injected. The redness of the eyes sometimes resembled the pink hue so well seen in the white rabbit, sometimes the stupid flush of the drunkard, and often the dry, injected look of inflammation from long exposure to cold, high wind. The flush of the face, though at first florid and red, with an active capillary circulation, quickly returning into the vessels after having been forced out by pressure with the finger, was, on the contrary, in other cases dull, dark and dusky, with a sluggish circulation, slowly returning into the vessels when pressed away with the finger, and giving the patient the appearance of having been thoroughly smoked.

In the first twenty-four or thirty-six hours, these symptoms steadily increased. The headache and pain in the back became unbearable. The heat of the skin was often intense. Sighing, moaning and tossing about were incessant. Delirium and wakefulness marked the nights. Thirst and a burning, inward heat tormented the patient. Oppression and a fullness at the chest, as if there was something pressing upwards, induced him to believe that he would be relieved if he could only discharge the load by belching or vomiting. Weakness, faintness, dizziness and dimness of vision made the slightest attempt to rise or move difficult.

This formed the first stadium of the fever. Death seldom

occurred in this stage. After four or five days, it passed off suddenly. Pain ceased and the patient announced himself well. The pulse fell; the skin cooled; the active flush disappeared. But the danger, instead of being over, was just beginning. The stomach became irritable, rejecting every thing and discharging larger or smaller quantities of a watery fluid; at first, colorless, gradually presenting specks like snuff; then threads of mucus, like hairs, to which the dark spots adhered; then larger and darker particles, like coffee grounds, and, finally, the fearful black vomit. The patient became restless—sighing, moaning, muttering. The dark color of the skin increased. The face, neck, chest, arms and hands became cold, shriveled and leaden colored. In some cases, the patient resembled one in the collapsed stage of cholera. Pain and distress of a different kind soon came on. The patient complained of burning heat in the stomach and bowels. The mind was gone, and, in his delirium, he would scream or groan in frightful fury from the intolerable anguish of his suffering. Sometimes the power of perception seemed annihilated, and the patient was unconscious of his own condition and utterly indifferent to every thing around him, even to the most ordinary amenities of life or the most engrossing ties of human attachment.

This condition characterized the second stadium of the fever and usually lasted two or three days. The patient often broke down here, and, yielding up his strength to the violence of the disease, passed away quietly or in a storm of mortal anguish.

The third and last stage was characterized by a continuance of many of the same symptoms and by the addition of others. The black vomit increased in quantity and changed to a still darker hue. It became thicker, and was often so putrid and offensive as to test the endurance of the most experienced nurses. The stomach would retain nothing; even a teaspoonful of anything producing the most excruciatingly painful retching. The capillary circulation seemed almost arrested. The urinary secretion was often totally abolished, and this was a symptom after which no patient ever recovered. Nothing was so positively fatal as this symptom. The eyes and skin often became jaundiced in a few hours, and, in some cases, so intensely as to render the patient unrecognizable. Hemorrhages, in some cases, occurred from the gums, tongue, nose, bowels and uterus. The odor from the patient's body was offensive in the extreme. The tongue and mouth were covered with putrefying blood, and the breath offensive beyond description. About this period of the disease, though sometimes at an earlier stage, hiccough was often added to the dreadful array of symptoms that racked the tortured patient. Coming on in paroxysms and lasting a longer or shorter time, it would wear out the small remnant of strength still left him, appearing to lacerate and root up the last tendrils through which the wasted sap of life was flowing.

From this last stage, recoveries, though rare, were sometimes met with. When they occurred, the convalescence was slow and relapses not unfrequent, as the consequence of imprudent exposure. When death occurred, the body was

often putrid and offensive before the citadel of life had fairly yielded to the enemy.

Treatment.

The treatment presented no new features, and needs not, therefore, much length of detail. The large doses of quinine and calomel were freely given by several of the physicians. This treatment having been employed and recommended by Surgeon Choppin, who was the first to arrive in Wilmington, was adopted by several of the resident physicians. Twenty grains of quinine and ten or fifteen of calomel were given on the first day, and the patient was made to drink warm teas, keep well covered under several blankets, the room closed, and the drinking of cold water strictly prohibited. On the next day, ten grains of quinine were given and the same medicine continued in smaller doses till its effects on the system were evident. The sweating process and the abstinence from cold water were enjoined throughout the continuance of the fever.

The veratrum viride was used by Surgeon White, when the patients were seen early in the disease, with a view of controlling the pulse; and calomel freely given, at the same time, in small and repeated doses.

Most of the other surgeons commenced the treatment by a gentle laxative, either with or without calomel, usually continuing this latter medicine in small doses for a moderate length of time. But none of them, as far as I know, with a view to produce salivation. The second and third day were usually passed in administering gentle diaphoretics, often combined with small quantities of quinine, and, at the same time, prescribing for any of the symptoms which seemed most urgent. The use of blisters over the abdomen, extending from the diaphragm to the pubis, was general. Hot mustard pediluvia, with cold applications to the head, were much employed during the fever stage. Hot mustard poultices to the chest, back or loins, when these regions were painful, gave great relief. Croton oil liniment was employed on the chest when the oppression and weight, or the sensation as if relief would follow vomiting or belching, were distressing.

In my own practice, I found the free use of the cold douche upon the head not only relieved the intense headache and calmed the restlessness, but quieted the pulse, causing it to diminish in frequency, hardness and fullness. It was performed by turning the patient's head and shoulders over an empty tub at the side of the bed, and pouring a full stream of cold water from a pitcher over the whole head, taking care to guard the ears and eyes. This was repeated at short intervals and as often as the patient called for it.

Throughout the disease, light nutritive matter was allowed, and, as soon as the febrile symptoms permitted, the use of stimulants was added to that of nutriment.

To allay irritability of the stomach, a great number of remedies were suggested and tried, but, in the nausea and vomiting following the fever stage and preceding or ushering in black vomit and the other formidable symptoms of the apyrexia, they were of little avail. Acid, alkaline and neutral

mixtures were used. Carminatives, stimulants and narcoties were tried. Musk, ether and creasote failed. The functions of the stomach, in the worst of these cases, seemed totally destroyed, so that nothing could be digested or assimilated. Its peristaltic action seemed reversed, so that every thing that was put into it was instantly returned. The poison of disease had done its duty.

Sometimes the work of destruction was not so thoroughly done. Small portions of ingesta were retained, and the stomach, like the other organs, seemed gradually to disen- thrall itself from the power of the poison. In such cases, champagne in small quantities, brandy with milk and lime water, arrow root and brandy, jelly, beef tea, and so on to other and more substantial nourishment, were retained and assimilated, and the dawn of hope would brighten up for the rescued victim.

Mortality.

It only remains for me now to give an idea of the extent of the disease and of its ravages. The "Wilmington Journal," of the 17th of November, gives the following statement of the progress of the fever, viz:

Up to September 19th.....	8 cases,	6 deaths.
Week ending September 26th....	26 "	9 "
" " October 3d	267 "	82 "
" " " 10th.....	395 "	40 "
" " " 17th.....	421 "	102 "
" " " 24th.....	194 "	111 "
" " November 1st.....	116 "	40 "
" " " 8th.....	47 "	30 "
" " " 15th.....	21 "	21 "
Up to November 17th.....	2 "	5 "
Total,	1,507 cases.	446 deaths.

This exhibits a very great mortality. It is about one in three and a third; thus showing the virulence of the disease. About this percentage is usually met with in hospital practice, where the patients generally come in late and have fewer chances of life than in domestic practice, where they are seen early. Much of the unsuccessful results of private practice here must be attributed to the unfavorable circumstances attending the sick; such as want of good nursing, of articles required for the nourishment of the patients, bad cooking, and, by no means the least of all, to the depressing effects of panic.

The population of Wilmington during the epidemic was variously estimated by competent observers at from 4,000 to 6,000. My own impression is that 5,000 would not be far from the truth. That would give about one case of fever out of every three and a quarter inhabitants, and one death out of about every eleven. But if we remember that, of the population remaining in Wilmington, at least one-half were negroes, and that negroes are much less liable to the disease than whites, it will appear that the ratio of sickness and mortality among this latter class are much greater than what is stated.

ART. II.—*Case of Diffused Traumatic Femoral Aneurism.*

Reported by Surgeon J. G. DUDLEY, P. A. C. S., in charge of First Division, Winder Hospital.

Private J. A. Coble, company "F," 45th North Carolina Volunteers—aged about twenty years, and a farmer by occupation previous to enlistment—was transferred from the fourth division of Winder Hospital to the first division on the 21st of January, 1864. While in the fourth division, the patient was under the immediate care of Assistant Surgeon Meek, who has kindly furnished the following history of the case:

"J. A. Coble, a private in company "F," 45th North Carolina, was wounded by a Minie ball November 27th, 1863. The ball entered the left thigh, upper third, anteriorly, and coursing inwards and downwards, made its exit at middle third, posterior surface. Said soldier entered the hospital December 2d. The wound healed rapidly without any sup- puration or any unpleasant symptoms, and was completely closed by the 8th of December. He was sent before the board on the 13th instant, and a furlough granted. Before the return of the furlough, however, he was suddenly seized, on the evening of the 16th instant, with very severe pain and swelling of the part. I was called to him and administered morphia in such doses as to relieve pain. Afterwards, com- pression and anodyne poultices were used; under which treat- ment the pain entirely subsided, as did also the swelling to a great extent. On the 23d December, there was again sudden increase of swelling, with severe pain. Under similar treat- ment, the pain was again relieved, and the swelling partially subsided. On the 8th of January, the swelling returned the third time, and remained until his transfer to the first divi- sion, January 21st, 1864. Prior to the 20th of January, the patient was free from fever."

Condition of Patient when admitted, January 21st, in the First Division.

I found a very large and firm swelling over the anterior and lateral portions of the left thigh, superior part; the largest circumference of which was near the junction of the upper and middle thirds of limb. There was but little dis- coloration of the integuments; pulsation of the common femo- ral artery very strong; but no pulsation could be detected in the popliteal, anterior or posterior tibial arteries. Patient complained of pain all the while, but at times it was very severe. On auscultation, a faint, yet distinct, *bruit* could be detected. Compression of the common femoral artery caused a cessation of the sound, but did not sensibly diminish the size of the tumor; the leg and foot were cooler than natural, but there was œdema of these parts. Along with these local symptoms there was considerable febrile movement. There were anorexia, slightly furred tongue, constipation, emaciation and debility. Warm laudanum fomentations to the swollen part and the occasional exhibition of quarter grain of sulphate of morphia gave temporary relief. Thus the case progressed from "bad to worse," until it seemed that, unless soon re- lieved, the patient would die from the sudden bursting of

the tumor. On consultation with Professor Gibson and Surgeons Read and Chambliss, a case of "diffused traumatic femoral aneurism" was clearly made out, and an operation at once decided on, which was performed, as follows:

The object in view was to "cut down freely in the tumor, find the orifice of the wounded artery, and cast a ligature above and below it." The common femoral being perfectly compressed by Professor Gibson, an incision of ten inches in length was made, commencing about one inch below Poupart's ligament, and carried down, to the course of the Sartorius muscle, to the lowest boundary of the tumor. A large mass of clotted blood was promptly turned out, and the femoral vessels easily found. The artery was wounded about four inches below Poupart's ligament. Two ligatures, one on the proximal and the other on the distal end of the wounded artery, were applied. It was now ascertained that the femoral vein was likewise wounded, necessitating the application of a ligature to that vessel. In the mass of coagulated blood was found a large cup of fibrine. This incision, though so extensive, did not cause the reduction of the swelling. There still remaining a considerable swelling on the outer and lateral aspect of the limb, a counter opening was made, about five inches in length, which led to another large depot of coagulated blood. This was turned out, as in the first case. At the bottom and upper part of this cavity was found and removed a beautiful cup of almost perfectly pure laminated fibrine, which had been developed on the outer aspect of the artery, and was doubtless partially detached from the vessel. This cup had evidently been formed some time, from the fact of its coloring matter having been almost entirely absorbed. Dimensions: the first cup was irregularly ovoid, about half the size of a large hen egg; the second more perfect and about the size of a hickory nut, hollowed out and about half an inch in thickness; the cavities were found to communicate by a small opening opposite the wounded vessels. They were now thoroughly cleansed by means of a large syringe and warm water. At the suggestion of Dr. Read, the ligatures were brought out through the opening connecting the two cavities, and secured outside the counter-opening, in order the more certainly to affect union of the large incision by the first intention, and also to admit of free drainage. The lips of the wound were now brought together and secured by a number of interrupted sutures, supported by adhesive strips. Over this was laid a light compress, secured by Scultetus' bandage. The leg was enveloped, as high as the knee, with cotton batting, and a roller bandage applied from the toes to the knee, and over this a broad flannel roller. The limb was placed in an easy position, and quarter of a grain of sulphate of morphia administered. In about twenty-four hours, the circulation was pretty well re-established in the limb; patient experiencing no pain or inconvenience from the operation. For the first few days, there were fever and considerable constitutional disturbance, with constipation of the bowels. An ounce of castor oil was administered, which procured relief. The fever continuing, I gave the following, which I continued for several days: Sixteen pills of sulphate of quinine, one

grain each; one every three hours. Also, tincture of chloride of iron, twenty drops three times a day. At night, quarter grain of sulphate of morphia was given to procure rest. The diet has been light and nutritious. On the fourth day, the wound was examined and found to have united almost by first intention. Patient has steadily improved; gaining strength and spirits daily; not a single untoward symptom has occurred, and to-day, (February 9th,) seventeen days after the operation, he is almost entirely well.

February 11th.—Examined wound this morning and find that the external incision has nearly healed; suppuration now slight and perfectly healthy; internal incision entirely healed; the ligatures have not yet come away; no pulsation in popliteal artery; temperature natural; general health improving rapidly.

ART. III.—*Aneurism of Femoral Artery cured by Ligature.*

Reported by Surgeon E. BURKE HAYWOOD, General Hospital No. 7, Raleigh, North Carolina.

Dixon Spivey, private Co. "C," 5th N. C. T., was sent to this hospital, May 28th, 1863. He was a large muscular man, by occupation a farmer, age 46 years. He was shot, while a deserter, by a militia officer, and was wounded with buck-shot—six shot penetrating the left thigh about the middle, and two the right leg. Traumatic aneurism of the femoral artery supervened on the 9th of June, 1863, produced by one of the wounds of the left thigh. The aneurism was seven inches above the knee. It was three inches in breadth and three and one-fourth inches in length. Pulsation very evident and strong. He having lost a great deal of blood when shot, I put him on quinia, iron, and generous diet, perfect rest of limb with cold applications. June 11th, I commenced digital compression of the femoral artery, immediately below Poupart's ligament. The compression was kept up, so as greatly to diminish, for twelve hours and a half, the current of blood. I gave, at the same time, tincture veratrum viride. At the end of twelve hours and a half, the compression was discontinued, and I had the pleasure of not being able to detect pulsation in the tumor. I think a coagulum was formed as no pulsation was perceptible up to the 3d of July, 1863, when a slight pulsation could be felt, which gradually grew stronger. The tumor also increased in size. He complained of much pain in the limb. The pulsation became stronger than ever, and the aneurismal tumor larger. The whole limb became swollen and œdematus. July 8th, 1863, I determined to ligate the femoral artery. I ligated it in Scarpa's triangle, five inches from its origin—the Sartorius muscle being drawn outwards during the operation. The operation has been, so far, successful, and the patient is convalescing. I gave him chloroform. What is most remarkable in this case is, that pulsation should have returned in the aneurismal tumor, after its suspension from the 11th of June to the 3d of July.

Jan. 10th, 1864.—I saw Spivey to-day. He has had no return of the aneurism. The operation was entirely successful.

ART. IV.—*Report of Eruptive Fevers treated in General Hospitals, Department of Virginia, from October 1, 1862, to January 31st, 1864.* Consolidated by Surgeon WM. A. CARRINGTON, Medical Director.

MONTH.	ERYSIPELAS.		RUBEOLA.		SCARLATINA.		VARIOLA.		VARIOLOIDES.		ALL OTHER, &c.
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.
1862—October.....	38	5	337	3	4	0	12	1	1	0	17
November.....	58	3	298	8	2	0	161	30	54	0	10
December.....	68	5	158	3	1	0	424	145	213	5	17
1863—January.....	118	15	146	0	5	3	438	221	169	9	5
February.....	99	10	92	7	1	1	187	137	87	5	27
March.....	70	11	136	9	34	0	133	57	57	4	19
April.....	127	9	80	3	4	0	192	62	120	1	59
May.....	200	13	132	1	2	0	66	39	41	1	123
June.....	165	14	91	5	3	1	110	24	60	1	67
July.....	86	6	48	1	2	0	43	30	68	2	35
August.....	74	5	51	1	0	0	8	4	6	2	7
September.....	40	1	18	0	0	0	0	0	1	0	15
October.....	50	6	6	1	0	0	13	2	9	0	19
November.....	59	2	33	1	0	0	100	13	27	0	32
December.....	72	3	87	1	0	0	403	114	96	0	5
1864—January.....	62	0	494	2	0	0	223	141	187	9	86
Totals.....	1,386	108	2,207	46	58	5	2,513	1,020	1,196	39	543
Per centum of Deaths...		7.79		2.09		8.62		40.58		3.26	

Per centum of eruptive fevers (7,903) to total number of cases treated (178,586)=4.42.

Per centum of deaths from eruptive fevers (1,218) to total number of deaths (10,961)=11.11.

Mortality in all cases treated, 6.13; in eruptive fevers, 15.41; in variolous diseases, 28.76.

Eruptive fevers constitute an important class in the reports required from medical officers of the Confederate States Army. On inspecting the records of the first division of this class, erysipelas, the uniformity in the number of cases occurring in each month is worthy of notice; while in other divisions the well known prevalence in the colder, and the diminution in the warmer seasons of the year, are well illustrated, especially in the reports of small-pox in the months of August, September, December and January. It should be considered that many of the cases reported as of this division are traumatic, and should not properly be classified among "eruptive fevers," but as instances of "local erysipelatous inflammation."

The second division of this class is one of the most interesting to the army surgeon, from its universal prevalence among soldiers. The reports from April, 1861, to October, 1862, would show a much greater prevalence than here reported. When it is remembered that only the severer cases of this disease are sent to hospitals, the mortality appears slight.

The reports of scarlatina bear out the experience of previous observers, that it is not a disease of armies.

The sixth division, embracing all anomalous forms of eruptive fever, were probably cases of *roseola*, and were so slight that no deaths are reported as having occurred among them.

The fourth and fifth divisions of this class, comprising modifications of the same disease, will painfully attract, both by the large number of cases occurring and the rate of mortality. From actual observation and investigation at the time, I can definitely pronounce upon the origin and progress

of small-pox in these hospitals. On October 18th, 1862, the first cases were brought to Richmond from Fort Delaware. Up to that time no cases had been reported here for some months, in the army or among citizens. By the 31st of October twelve cases had been reported. In carefully tracing each, it was determined that those from Fort Delaware did not disseminate the disease, being quarantined and avoided by all, but that soldiers from the Army of Northern Virginia had brought the disease to the hospitals, and, being unconscious and unsuspected, had exposed many to it before the diagnosis was made. The army had just reached the vicinity of Winchester after evacuating Maryland, subsequent to the battle of Sharpsburg. There were but few cases from the army, and those had not been prisoners, nor had they seen any returned prisoners. These cases went to Charlottesville, Lynchburg and Richmond, at which points the malady spread, but much more rapidly and extensively at Richmond.

It is a fact of interest that the disease has not spread in the army. The free ventilation of the field, with the men in bivouac and without even tents, seems to have so diluted the poison that it could not reproduce the disease in others. So in general hospitals no combination of remedies, regimen or expedients have been found so much to influence the progress or termination of the disease as free ventilation. A diminution of the capacity of the hospitals from 800 to 1600 cubic feet for each patient showed sensible effects, and removal to large tents still more reduced mortality.

There are several reasons by which we may rationally account for this great excess in the mortality of small-pox over that ordinary in civic practice:

1st. The mass of the army, being from the rural population, became soldiers unprotected by vaccination. In cities where the rich and the poor are by public or private expense all vaccinated for generations, the disease assumes a modified form, *while*, in races not hereditarily protected, as among our American Indians, it assumes as malignant a form as that existing before Jenner's great discovery.

2d. The subjects of the disease were men previously debilitated by privations, fatigue and disease, and oppressed with nostalgia, and to this is now superadded the consciousness of being afflicted with a loathsome, obnoxious and dangerous disease, and the bad effects of removal from one hospital to another.

3d. *The malignity of this epidemic.*—Of this I have much evidence from my own observation; but I beg leave to quote the very forcible and apposite remarks on this subject contained in a letter of January 28th, 1863, from Dr. Albert Snead, City Physician of Richmond:

"I have had charge of the City Hospital for about ten years, and never during that time has there been so extensive prevalence of small-pox, nor has the percentage of mortality risen so high, as during this visitation. Not only among the soldiers who have been under my care, but also among the resident population, the mortality has been fearfully great. Nor have I ever in any former visitation witnessed so large a percentage of confluent cases, or so many strictly malignant cases—cases in which the experienced eye would detect evidences of a necessarily early and fatal termination. Before this visitation I have never seen a case so malignant as to terminate life in less than six days from the first appearance of the eruption, while, during this prevalence of the disease, I have seen many cases ending in less time, some within three or four days. Moreover, heretofore I have never seen a case of varioloid prove fatal, while in this visitation I have witnessed several cases terminating in death, and that, too, after the patients had apparently been doing well for days together, when suddenly they would begin to give away without manifesting any special local trouble, and, despite the use of stimulants and other sustaining treatment, gradually sink and die. I have been distressed and annoyed at these unexpected deaths, and can only account for them by supposing that the poison in this visitation is unusually malignant, overcoming the vital powers even in those cases which for a time appeared to be proceeding favorably. I have observed that the tendency to the formation of abscesses is greatly increased over former visitations—patients who have suffered moderately mild attacks, even of varioloid, scarcely escaping them. From this I infer that the poison of the visitation is with difficulty eliminated, the endermic eruption, as is usual, not accompanying it."

As extraordinary efforts have been made to protect by vaccinating, with pure and reliable virus, the army and all persons exposed to its influence; as the most scientific means have been taken to prevent the disease, and to treat it, when incurred, by every resource known to the profession, I cannot

attribute the mortality to want of care or skill in the medical officers having charge of the cases.

I will, in closing, notice two untried expedients which have been lately suggested in foreign medical journals:

1st. It is asserted that by producing, in the first stage of the disease, a free pustulation on the upper part of the chest with *tartar emetic ointment*, the eruption on the face will be prevented from appearing to the same extent that it otherwise would, the prior pustulation acting as a counter-eliminative or counter-irritant. This remedy is now being fully tried in the hospitals near this city, and the result will be reported.

2d. In the United States and England recently, a notoriety has been given to the *Sarracenia Purpurea* in the treatment of small-pox. Very contradictory reports appear in the English medical journals, but several laud its effects, stating that "the unmistakeable evidence of the efficacy of this remedy in arresting the progress of small-pox has been conspicuously manifested in many cases."

Information has been given me by a reliable physician from Baltimore that other physicians in that city were using it with the *alleged* result of arresting the disease on about the sixth or seventh day of the eruption, when it would result in desiccation by the tenth day, with little or no pitting.

This is a remedy indigenous to this continent, being found in the marshes from Canada to Florida, and known popularly as the side-saddle plant or fly-trap. The formula for its use is an infusion prepared with two ounces of the sliced-root to two pints of water, of which from four to eight fluid ounces are taken during the twenty-four hours.

This plant was known to botanists, and held in some estimation as a domestic remedy, but was first scientifically experimented with by Surgeon F. Peyre Porcher, P. A. C. S., who published an article on its medicinal and chemical properties in the "Charleston Medical Journal," in 1849. By proving it on himself and others, he found that it was a bitter tonic, and a stimulant to the stomach and the peristaltic action of the whole alimentary canal—that it promoted the renal and other glandular secretions—produced increased action of the circulatory system, with increased frequency of pulse, irregularity of the heart's action, and decided cerebral disturbance.

The chemical analysis showed a complexity in its elements, and, among others, an alkaloid resembling *cinchonia*.

In a sluggish and torpid condition of the stomach, liver, bowels and kidneys, Surgeon Porcher used it with decided effects, and reports, in "The Resources of the Southern Fields and Forests," 1863, its extensive use in South Carolina and Georgia.

Not being on the supply table of indigenous remedies, I have not been able to obtain the remedy from the Medical Purveyor, but have taken steps to procure a supply, when its value will be faithfully tested, and report made of the result.

ART. V. — *On the use of Phytolacca Decandra in Camp Itch.*

By Surgeon JNO. H. CLAIBORNE, in charge of Petersburg Hospitals.

In this time of scarcity of medical supplies, I beg to call attention to two articles of indigenous growth, which I have used with success in the treatment of a disease very prevalent now in the army, viz: "Camp Itch."

These remedies are the phytolacca decandra (poke) and the broom sedge or broom straw. The botanical name for the latter, I do not know, but it is a growth that covers every impoverished and worn-out field in Eastern and Piedmont Virginia, and well known to every person. The poke is scarcely less common and equally well known. Before describing the manner of administration of either of the remedies, or detailing the circumstances under which the one or the other should be exhibited, I beg to remark that I apprehend no little confusion exists in the minds of some medical officers in regard to the precise character and classification of camp itch. It is one thing in its inception and early stage, and another as it progresses, with or without treatment, to the aggravated condition in which it is often met with. The disease which generally has been brought under my observation, and registered by medical officers as "itch," or "camp itch," is rarely *scabies*, almost never. In the treatment, therefore, which I propose, I do not wish to be understood as referring to that disease.

Camp itch, as I have observed it in its beginning, is not a disease in which the animalcule of *scabies*, the *acarus*, is ever seen. It is not even a vesicular disease. It is papular, and whilst almost a *sui generis*, is more nearly akin in my estimation, to lichen, some cases to prurigo, than to any other skin disease. When chronic, subjected to the irritation of scratching and to neglect and an hundred influences, unpropitious and aggravating, such as a soldier in camp is exposed to, it changes its character—seems sometimes pustular, sometimes vesicular, occasionally squamous—very often when about the face and neck and head, would pass for eczema impetiginodes, which it very much resembles. Now it is in the earlier and papular condition of the disease that I have found the poke root of most service. Using the root in the form of a strong decoction, as a bath, once or twice a day, then washing off with soap and water and changing the clothes frequently, I believe the disease may often be cured in a week or ten days. When scratching, or other sources of irritation, have changed the character of the disease, and particularly, if much or any inflammation of the skin attend the eruption, this treatment will give great pain—few patients can stand it, and it is in these cases I use the decoction of broom-straw root, three or four times a day, and if this gives pain, even substituting for it the decoction of slippery elm. When the irritation subsides, the decoction of poke may be used again, regulating the strength of the decoction by the smarting effect produced on the patient. With all of this, I have found it very necessary to regulate the diet of the patient, a very important indication I think—restraining him from meats of all sorts and substituting vegetable and farinaceous articles. If there be utter absence of officinal articles of the pharmacopœia, viz: arsenic,

mercury, &c., I should use, and have used, with good effect, the saturated tincture of the berries of the phytolacca dec. A teaspoonful of the sat. tinct. three times a day is a good laxative, and enjoys some reputation as an alterative.

I believe the treatment which I have thus briefly indicated, will, in eight out of ten cases, effect relief, as soon as can be secured by sulphur, arsenic, or the alkaline baths, which are the routine treatment, and which are now so difficult to procure.

Of course, I should prefer, as joined to the treatment I have proposed, the constitutional remedies of mercury and arsenic, one to correct the vitiated secretions of the upper bowels and the other as alterative.

ART. VI.—*Gun-shot Wound of Lung, Liver and Intestines.*

Reported by R. W. JEFFERY, Surgeon C. S. N., in charge Naval Hospital, Savannah.

Frank McCann, æt. 24, born in Ireland, seaman attached to C. S. Steamer Isondiga, Savannah, Georgia, at a brothel on the 1st instant, about half-past twelve o'clock at night, received a gun-shot wound in the chest. He had been drinking quite freely before the reception of the wound. The person who shot him was above McCann, on the upper part of the stairway, McC. being near the last step, and appears to have been turning, for the purpose of leaving, when he was shot.

The assistant surgeon, who saw him soon after he was wounded, not being able to trace the ball, had him brought to the hospital and gave him half grain sulphate morphia.

I saw him, for the first time, about 6 o'clock in the morning. He was then lying on the back, expression of face haggard; skin cold and clammy; respiration hurried and laboured; lips livid; pulse small, quick, and very frequent; thirst intense; vomited continually after drinking water; complained of pain in region of bladder, which he ascribed to retention, saying that he "could not pass his water;" introduced catheter, only a few drops of clear urine passed, but still he suffered from urinary irritation, which was relieved by the administration of an enema of 40 drops tincture of opium. On an examination of the wound, discovered that the ball had passed into the cavity of the chest obliquely from the neighborhood of the angle of the fourth rib of the right side; *extensive emphysema* around the wound, over right side of chest; there was but little external hemorrhage; no *cough nor expectoration*; ordered 1½ grs. pulverized opium, to relieve his pain, which was very great in lower portion of abdomen, and directed a bandage to chest. With the exception of the vomiting, his symptoms were relieved. About an hour after, saw him again, when it was discovered that his respiration was more hurried, his pulse increased in frequency and very weak; vomiting continued, and he was lying on his left side; asked him if he could not lie on the right, said "no, he could not breathe if he did;" had him raised in bed and examined his lung—respiratory murmur in right side not to be heard; percussion gave a dull sound. From

*Labretal
Rise.*

this time he declined rapidly, and died at half-past three o'clock, P. M., or ten hours after the reception of his wound. His intellect was clear up to a few moments of his death.

P. M. Examination.—Face and body much discolored from congestion, in large blotches of a very deep crimson hue, and chest much enlarged by emphysema; ball had entered about one and a half or two inches below the wound, into the cavity of the chest, passed through the lower portion of the lower lobe of the right lung, through the diaphragm into the right portion of the right lobe of the liver; thence into the small intestines, which were perforated several times, and passed into the muscles of the iliac region of the left side, in which it was imbedded. Ball was removed and found to be a slug apparently of a Colt's revolver. The right lung was crepitous; in pleural cavities of both sides were serum and blood; in peritoneal cavity there was also bloody effusion; on omentum was discovered, in two places, coagulated blood; anterior and interior surface of stomach much injected.

On opening the abdominal cavity, an escape of gas or air issued, which might have come from the lungs, through the perforated diaphragm, or from the perforations in the small intestines—more probably the latter from its odor.

This case derives its interest from the great extent of injury and from the importance of the parts injured; lung, liver and small intestines. Some of the most common symptoms of injury of the lung were absent, I mean bloody expectoration and cough. Another equally characteristic of the injury, though less common, presented itself, emphysema. The frequent rigors, great thirst and constant vomiting, indicated the injury done to the bowels, though the thirst would also indicate great loss of blood, and might also have been caused by the debauch of the previous night; irritation of the bladder, caused probably by effusion of blood on the peritoneal covering of that viscus. Since the beginning of this war this is the second case of wounded lung in which, if my memory serves me right, I have seen emphysema, and in which there was no expectoration of blood.

ART. VII.—*Case of Congenital Defect of Rectum.* Reported by B. W. ROBINSON, M. D., Fayetteville, N. C.

An infant, aged seven and a half months, just returned from a long journey, came under my professional care for slight hemorrhage from the bowels. *Embonpoint* good. Slight catarrhal affection, and more or less of dysuria noticed from birth. Had a fortnight before a dysenteric attack attended with severe tenesmus, which seemed to have yielded readily. Has had within a few days dejections of blood; teething.

Inspection discovered a slight fissure in verge of anus, anteriorly. A few days after, perceptible fullness of perineum, which resulted in abscess and discharged itself by a longitudinal slit of four or five lines, very close to, and on left of the raphe. In a few days more, a parallel opening of about equal extent occurred on the right. Subsequently, after an interval of two or three days, urine flowed per rectum. Up

to this time excretion from the bladder had been through the natural channel. Paroxysms of severe suffering prompted an examination, cautiously made, with the little finger, which detected marked fullness and fluctuation in the prostate gland. This discharged in a day or two, and then a rent of four to six lines occurred in upper portion of the scrotum, through which feces were extruded. Successive acts of defecation increased the rents (those on either side of the raphe being thrown into one,) 'till a frightful fissure, laying open rectum to the extent of two inches—membranous portion of urethra, and nearly the entire scrotum along the mesial line, was induced.

Duration of the case, about seven weeks. Alimentation had been for the most part good. Bowels acting generally three or four times in twenty-four hours. Alvine evacuations healthy. Dentition going on, during which four incisors were evolved. Occasionally, febrile disturbance. Catarrhal symptoms were troublesome latterly. Hemorrhage of only occasional occurrence—at one time exceeding a tablespoonful, and rarely more than a teaspoonful.

After a night of sleeplessness and suffering, patient sank suddenly. Death by asthenia.

Necroscopy.—Notable emaciation of lower extremities.—Small purulent deposit in sub-pubal areolar tissue. Abdominal viscera healthy. Slight adhesion of pelvic organs. Bladder empty—contracted to a containing capacity of not more than two fluid drachms. Rent through rectum (1½ to 2 inches in extent,) and membrano-prostatic portion of urethra—save these, no evidence of disease. Rigid scrutiny completely dissipated a diagnostic hypothesis which assumed the presence of, and causation by, a foreign body.

Deduction.—Congenital defect—want of integrity of structure in mesial line, which allowed disparting, during tenesmus of original attack, and subsequent defecatory efforts.

ART. VIII.—*Excision of the Superior Third of Humerus.* By OTIS FREDERIC MANSON, Surgeon P. A. C. S., in charge of General Hospital No. 24, Richmond, Va.

W. H. Ricketts, aged 22, private Co. "A," 13th Virginia regiment, was wounded in the battle of Gaines' Mill, on the 27th of June, 1862, by a Minie ball passing through the right arm near the shoulder joint, lacerating the capsule and splitting the humerus from its surgical neck, downwards, into many fragments to the extent of three inches.

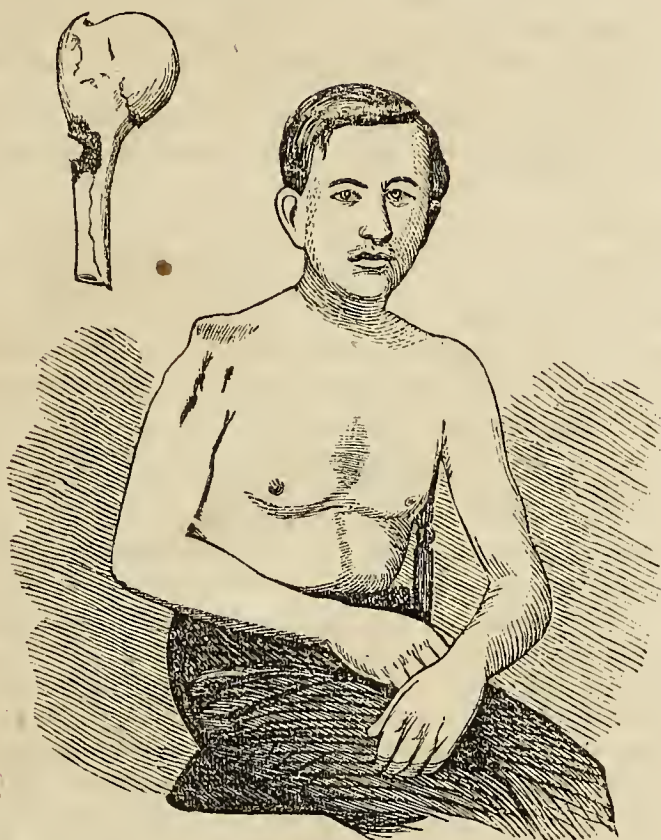
He was admitted into the hospital, June 28th. Symptoms of great vital depression existing, operative procedure was postponed until the 6th of July.

Operation.—Complete anæsthesia was induced by the inhalation of chloroform.

The operation simply consisted in making a single perpendicular incision through the deltoid, from the acromion, downwards, to the extent of five inches. The bone was carefully excised as far down as it was found to be injured, at which point a chain-saw was passed around and the shaft divided.

Using the longest of the fragmentary ends as a lever, the head of the bone was lifted and dissected from its socket.

Many spiculæ of bone were found imbedded in the surrounding muscles—these were carefully removed; the parts brought together by suture; the limb supported by pillows; and cold water dressing applied.



The cure of the case was greatly delayed by three separate and distinct attacks of erysipelas, occurring on the 13th and 26th of July, and the 22d of August, which were, however, promptly arrested, by the free use of sulphate of quinia and the tincture of the chloride of iron.

The patient has now very good use of his arm—the functions of the fore-arm and fingers being almost perfect. He writes a beautiful hand, and altogether, presents another of the many proofs of the value of this surgical expedient, in preference to that formerly practised in such cases—amputation at the shoulder joint.

CONFEDERATE STATES HOSPITAL REPORTS.

Eighteen Cases of Gun-shot Wounds of the Head, observed at the General Hospital, Charlottesville, Va.

Surgeon J. L. CABELL, in charge.

Case 1.—J. W. Hambleton, private Latham's Virginia battery, aged 37, entered the hospital August 11th, 1862, with a gun-shot wound, received August 9th, at the battle of Cedar Run, in the left temple, at or near the junction of the temporal with the parietal bone. The skull was found broken and pieces depressed. There was no paralysis and no mental aberration, but the night before the operation, he was possessed with the idea that he would die in a very short time. He was operated on August 24th. In this case the trephine was used, and all the broken pieces were removed. About a week after the operation, the patient had a slight attack of erysipelas of the scalp, but soon recovered from it. He has

entirely recovered, but is injuriously affected by the heat of the sun.

Case 2.—John Cotton, private 17th Georgia regiment, company "G," aged 23, received a gun-shot wound August 9th, 1862, at Cedar Run, on the left side of the head, near the parietal protuberance—fracturing the bone, the internal table more extensively than the external, (this, I believe, is generally the case.) The mind was unaffected, but there was slight paralysis of the right side of the body. He was operated on September 14th—it was found necessary to use the trephine. Several pieces of bone were removed. Ten days after the operation, erysipelas supervened, but was readily subdued. This case did well, constantly improving, until Oct. 9th, when he was furloughed, at which time his wound had healed. He has not since been heard from.

Case 3.—W. C. Allen, private 1st Georgia regiment, company "E," aged 22, admitted Aug. 27th, 1862, with a gun-shot wound of the head. His general health was good. The wound in the scalp was about an inch and a half above the zygomatic process, and half an inch anterior to the left ear, i. e. a vertical line drawn along the front of the ear. The wound was suppurating slightly, but there were no symptoms indicating any serious injury to the skull or brain. The patient was going about as if nothing was the matter, and eating heartily. When admitted, the probe could not be introduced to the skull—the track of the wound being closed, probably by a firm clot, which had not been discharged by suppurative action. At the next examination with the probe, four or five days after his admission, the probe readily passed downwards under the temporal muscle, to the bone, which was fractured and depressed, but to what extent, could not be ascertained except by cutting. The seat of fracture was about three-fourths of an inch above the zygoma, and to reach it, required division of the swollen and puffy integument, and the temporal muscles in the vicinity of the fracture. A consultation was held, and an operation determined on. The ball, a common musket one, had been removed through the wound by a surgeon, shortly after the injury was received.

The operation was performed September 2nd, one week after his admission, as follows: I cut through the scalp and muscle beneath, making two incisions, one vertical, the other horizontal, crossing each other at the wound in the scalp, and making each about two inches in length. In doing so, it was necessary to apply two ligatures to the temporal artery and a branch of it. When the different flaps were partially dissected up, the fracture was found to be quite irregular, and as large, or larger, than a twenty-five cent piece, while the fragments were driven in and pressing upon the dura-mater. With considerable difficulty, thirteen pieces of bone were removed with the forceps, several of them were quite large and grooved on the inner surface, showing the seat of injury to be directly over the middle meningeal artery. After removing all the pieces that could be felt with the finger, the parts were drawn together by strips of adhesive plaster, and the wound dressed with wet lint. The patient had been put under the influence of chloroform, and kept so, during the operation, but it required three or four assistants to hold him, the chloroform merely depriving him of sensibility. The next day slight erysipelas had made its appearance around the wound, involving the ear and side of the face, and nearly closing the left eye. He was directed to take ten drops of muriated tincture of iron, every two hours, and to keep perfectly quiet. In twenty-four hours the erysipelas had nearly disappeared and the iron was discontinued during the day.

From the third day after the operation, no unpleasant symptoms occurred, the wound suppurating finely and rapidly closing; and this too with the patient going about the hospital more or less every day, as it was found impossible to keep him

✓ Nice for. 801-

✓ Nice for. 801-

Operation. Tabulated Rice

in bed. The treatment after the disappearance of the erysipelas, consisted solely in the application of wet lint twice a day to the wound, and keeping it clean.

September 18th.—The wound has healed, except just at the intersection of the two incisions. A small opening, the size of a probe, exists at this point, through which a slight discharge is kept up.

Case 4.—M. V. Jennings, private 35th Georgia regiment, company "B," aged 18, received a gun-shot wound in the head, near the parietal protuberance, making a slight groove or depression in the bone. The wound was received August 9th. When he entered the hospital he had jaundice. The side opposite to the wound was paralysed. No regular record was kept of this case. He was not operated on. Furloughed October 7th, with slight improvement.

Case 5.—Benj. Bird, private 16th Virginia regiment, company "F," aged 30, received a gun-shot wound August 30th, 1862, in right temporal region, fracturing the bone and depressing the fragments. He was operated on September 6th, and the pieces removed. The wound healed in six weeks without a single unfavorable symptom.

Case 6.—Isaac Souls, private 23d South Carolina regiment, company "H," aged 19, wounded August 30th, 1862, in the forehead, near the anterior fontanelle, and directly on the middle line. His general health was good. He was operated on September 5th, and the trephine was used. The saw was applied to the right of the middle line to avoid the longitudinal sinus; but, curiously enough, it happened to be one of the cases in which there was a lateral deviation of that sinus, and when the disc of bone was removed, the sinus was found exposed, but uninjured, as far as could be seen. One week after the operation, severe chills set in, followed by fever; then double pneumonia, of which the chills were precursors, made its appearance, with symptoms of pyæmia; and sixteen or seventeen days after the operation, the patient died suddenly during a fit of coughing, from rupture of the longitudinal sinus and profuse hemorrhage. *Post-mortem* revealed ulceration of the coats of sinus, with small spiculæ of bone resting upon them.

Case 7.—William Robertson, private — Alabama regiment, company "E," aged 26, wounded September 17th, 1862, on the right side of the forehead, at the root of the hair and below. The bone was extensively fractured and depressed, at or near the temporal ridge. No paralysis existed, and but little pain. He was operated on October 10th, at which time he had become much enfeebled. The scalp was undermined and the bone denuded around the fractured portion, and large quantities of pus were discharged daily. During the operation, it was found necessary to use Hay's saw, to release a large fragment of depressed bone. No unpleasant symptoms followed, and the patient finally recovered with a large and depressed cicatrix.

Case 8.—G. H. Sandford, private 8th Georgia regiment, company "A," aged 27, wounded August 28th, 1862, in the head, fracturing both tables of the superior portion of the left parietal bone, and depressing them. In this case, there was paralysis of the right side of the body, but the mind was clear. He was operated on September 23d, and all the pieces removed. The paralysis was entirely gone ten days after the operation. The patient rapidly improved and was furloughed and sent home soon after. He is believed to have recovered entirely.

Case 9.—B. W. Wells, corporal 3d South Carolina regiment, company "F," aged 24, wounded December 13th, 1862, "two inches above and to the left of the occipital protuberance." The wound in the scalp was three inches in length, and the bone was denuded for two and a half inches and slightly fractured. There was no depression that could be

detected. This case was not operated upon. He seemed to be doing well for three or four days, then became restless; he had no fever, but soon became delirious. December 20th, coma supervened; afterwards, spasms—at first, of facial muscles, then it became general, and on the 21st he died.

Autopsy showed the external table slightly fractured, and the internal, also, for about an inch, but nearer to the middle line of the skull. About one ounce of extravasated blood was found between the skull and dura-mater, and a like quantity between the latter and the brain. The brain itself was disorganized to the depth of three-fourths of an inch and to the extent of about two square inches.

Case 10.—J. W. Abernethy, sergeant 15th South Carolina regiment, company "B," aged 26, wounded in the head December 13th, 1862, four inches above the right ear, fracturing the skull.

December 16th, 2 o'clock, P. M.—Wound clear. Paralysis of left arm and leg. Tongue protruded straight. Temperature of the left side lowered. Cerebral matter oozing from the wound. Dr. Davis operated, making a Y incision, removing a minnie ball, the base of which was one-third of an inch below the level of the internal tube; and a piece of the skull one inch in diameter, which it had carried before it, with a much smaller piece at the same level. Operation performed under chloroform. After removal of foreign bodies there was quite free arterial hemorrhage from the bottom of the wound, which subsided in about fifteen minutes; but some oozing continuing, per sulphate of iron was applied for two or three minutes, on a dossil of lint.

December 18th.—Pulse 100-2. Slept well on the night of the operation from solution morphia two drachms. Took none last night and slept badly, (owing he says to being cold.) Is, and has been, rational. Appetite very good. No stool since the operation. A large piece of bone came from the wound this morning. He complains of the left arm and leg feeling asleep, and aching in the knee and elbow. Tongue moist and clean. No hemorrhage from the wound. A clot was removed yesterday. Discharge free and sanious.

December 19th.—complained at dark last night of insatiable thirst, then had convulsions. Vomited and became comatose; at the same time, considerable hemorrhage occurred from his wound. He now passes his urine involuntarily. The right arm is forcibly flexed. The left and both lower extremities are relaxed. In this condition he sank rapidly, and expired at six P. M. No autopsy was made.

Case 11.—J. T. Damron, private 18th South Carolina regiment, company "H," wounded in the forehead, about two inches above the centre of the left eye. Date of the wound not remembered. He entered the South Carolina hospital September 6th, 1862, a few days only after its reception. He was operated on and several pieces of bone were removed. There were no head symptoms, and no paralysis existed. The case did well and he was furloughed October 8th, nearly well.

Case 12.—E. Pellum, private Holcombe Legion, ———, aged ———, received a gun-shot wound just above the right eye, fracturing the bone about the middle of the supra-orbital arch. The fracture extended upward a short distance along the frontal bone, and backward along the orbital plate. He entered the South Carolina hospital September 6th, a few days after the reception of the injury, and was operated on the same day, as case 11th. The loose fragments were removed, including portions of the orbital plate. No bad symptoms ensued and he was furloughed October 8th, nearly well.

Case 13.—A. McDonald, private Palmetto Sharpshooters, ———, aged ———, wounded in the forehead at the outer extremity of the left frontal sinus, fracturing the bone to a

considerable extent. His wound was received a few days prior to the 6th of September, 1862, at which time he entered the South Carolina hospital. He was operated on the same day, with cases 11 and 12. The outer wall of the sinus was removed; the inner was found uninjured. This man was furloughed Nov. 11th, nearly well.

Case 14.—S. D. M. La Coste, sergeant 23rd South Carolina regiment, company "K." This was the fourth case occurring in the South Carolina hospital in this place. He was wounded, and received here at the same time with cases No. 11, 12 and 13. His wound, also, was in the forehead, a little to the left of the middle line, midway between the eye and the root of the hair. There was an indentation of the bone, but no perceptible fracture. The periosteum was gone to the extent of about one square inch.

An operation in this case was not considered justifiable. The man at this time, July 1st, 1863, (I am informed,) is at home, not yet recovered, and suffering constantly with intense pain in the head, regretting that he was not operated upon.

Case 15.—The following case was not seen by a hospital surgeon until a few minutes after his death, as he was staying at a private house and was attended by a private physician:

G. A. Harrell, lieutenant-colonel 14th Tennessee regiment, aged 55, wounded at Cedar Run, August 9th, 1862. He was struck by a ball about midway between the mastoid process and the vertex on the left side. A single piece of bone was driven in upon the dura-mater, about the size of a twelve and a half cent piece, but irregular in outline. It was removed after death with forceps. He was delirious most of the time, and for some hours before his death, comatose. His death occurred August 14th.

Case 16.—N. M. Morris, major 14th Tennessee regiment, aged 30, wounded at the second battle of Manassas, August 30th, 1862. A common musket ball struck the left side of the head, a little in front of, and on a level with the parietal protuberance. The skull was broken for about two and a half inches longitudinally, (*i. e.* horizontally) and about one inch across. The wound in the scalp was still larger. The ball remained in the wound. He was not examined by a surgeon on the field, as no one who saw him thought he would live beyond a few hours at the most. The day following, a large piece of bone was removed by his brother, with his finger. He was perfectly unconscious for five days, and when, at the expiration of that time, consciousness returned, he was found to be paralysed on the right side of the body. Three months after the reception of the wound, the ball was removed, as also a large piece of bone. Several smaller pieces were taken away, or discharged, at intervals; the last of them about four months after he was wounded. His brother says that some of the brain came from the wound shortly after the wounding, so that the membranes were probably extensively lacerated. His general health had not been good for four months before he was wounded, having suffered from chronic diarrhoea; this ceased, however, at the time. At present, July 1st, 1863, he is walking about with the assistance of a crutch. His paralysis is getting very slowly better; but he speaks with a good deal of difficulty. He frequently forgets what he is talking about, and says he cannot read anything from inability to connect the words into a sentence. His appetite is good and general health much improved. The wound is not yet entirely healed, and probably will not be for some time to come. There is a large cicatrized surface covering a depression two and a half inches long and three-fourths of an inch wide, beneath which, when the head is bent forward, the pulsations of the brain can be seen and felt distinctly.

The foregoing account, I received from the major himself, never having seen him before it was written. I could not avoid coming to the conclusion at the time, that although his

ease certainly proved a man may recover from a terrible wound of the head, without active surgical interference, it would have been far better for him, and saved him from a great deal of suffering, to say nothing of time gained, to have had the ball and fragments of bone removed at once, instead of waiting for them to become loose and come away spontaneously by a long and tedious process of suppuration. All the time running the risk of a disorganizing inflammation of the brain and its membranes, from their constant pressure and irritation.

Case 17.—S. M. Willingham, private 5th Alabama regiment, company "D," aged 25, wounded at Boonsborough, Maryland, September 14th, 1862, in the forehead, just at the root of the hair, and on the right side near the middle line. He was for a short time unconscious, and for several days after, was occasionally delirious. There was no paralysis. He was taken prisoner at the time and carried to Philadelphia, where he was operated on ten days afterwards, and the pieces removed without the use of chloroform. His wound has entirely healed, leaving a depressed cicatrix. He suffers occasionally with a severe headache, which he attributes to his injury.

Case 18.—T. Wilson, a prisoner, 5th United States cavalry, company "D," aged 28, wounded at Brandy Station, June 9th, 1863, in the head, on the left parietal protuberance, about four inches above the left ear. The man was insensible for several days, and partially paralysed on the right side. Four days after the reception of the wound, the ball and pieces of bone were removed. He is now (July 6th) apparently doing well and the wound healing. He never has any pain in the head, but complains of a constant numbness and pain in his right arm, with loss, to a considerable extent, of its motions; but this is rapidly improving. He bids fair to recover entirely.

Remarks.—The foregoing list of cases, drawn up by Surgeon Allen, from notes furnished by the different operators, exhibit results differing remarkably from those announced by Dr. McLeod, in his "Notes on the Surgery of the Crimean War," both as to the mortality of cases of gun-shot fracture of the cranium, and as to the dangers incident to the use of the trephine. There were but two cases of actual perforation of the skull by the ball, and one of these (case 16) has recovered with a gradually improving hemiplegia. The patient articulates well, walks without his crutch, and begins to use his arm. As to comminuted fracture without actual perforation by the ball, the foregoing record proves that, even under the moderately favorable circumstances of a public military hospital, gravity of prognosis is an exceptional phenomenon.

G. S. Medical & Surgical Journal.

RICHMOND, MARCH, 1864.

AYRES & WADE.....PUBLISHERS AND PROPRIETORS.

Treatment of Aneurism by Compression.

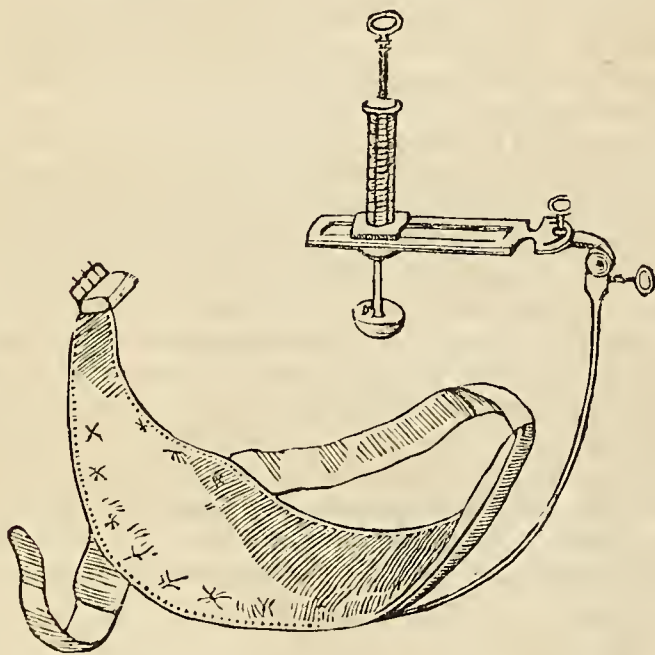
Every attempt to cure aneurism rests upon this principle—to obliterate the artery at the seat of disease, and turn the current of blood into other and more circuitous routes.

Imitating nature in its spontaneous method of cure, by the gradual deposit of fibrine in the aneurism and the ultimate occlusion of the vessel, we have the brilliant conception of Hunter, who ligates the artery between the heart and the sac; the ingenious method of Brasdor, producing a reflex stasis in

the tumor by tying the distal portion of the artery, and the direct, but hazardous effort to extirpate the tumor by laying open the sac, and ligating both ends of the vessel.

The attempt to cure this formidable surgical condition by compression, whether direct or indirect—originating probably with the French, but first put into successful operation by the Irish surgeons—covers the same idea. The circulating fluid is prevented from passing along the dilated or ruptured tube with its usual velocity and momentum, and is thus encouraged to deposit fibrinous layers, which eventually occlude the calibre of the tube. This procedure holds this great advantage over the process by ligature, for it avoids the necessity of a surgical and dangerous operation, and leaves the parts approximating as closely as possible to a natural state.

The difficulties in this mode of treatment are, first, how to compress the artery, without at the same time checking the circulation of blood in the whole limb; secondly, so to graduate the compression as that a certain amount of blood may continue to pass through the tube to furnish the supply of fibrine required to effect the cure; and third, to prevent the intense pain and other more serious consequences, where too much force is exerted at the point of pressure.



The instrument delineated in the accompanying engraving, the invention of Mr. Earnest Hart, of Marylebone Hospital, overcomes, in a great degree, the impediments to success, and is so simple as scarcely to require an explanation. It is applied by a broad strap to the body, and the limb is thus entirely free from general pressure. The compressor is turned on its pivot and adjusted over the point of selection, and the amount of pressure is then registered by the action of the spiral spring upon which the pad-rests, and a dial plate gives, at a glance, the number of pounds' weight thrown upon the artery at any time.

Such an instrument as this offers all the advantages of *digital* compression, heretofore the most successful mode of applying this principle to the cure of aneurismal tumors, and is always to be relied on after once carefully applied; whilst,

without numerous relays of patient and careful assistants, the digital method will result in failure.

It may be also remarked that, by registering accurately the amount of pressure required to produce the desired effect, we may at last approximate closely to the probable number of pounds' weight necessary to obtain the object, in an average number of cases.

Mr. Hart deserves also to be commended for his ingenious application of compression in popliteal aneurism, by flexing the leg on the thigh, and bandaging the whole limb firmly, thus obliterating the sac by a direct pressure. The English journals report twelve successful cases since 1858, when the idea was first promulgated by its author.

Association to Purchase Artificial Limbs for Maimed Soldiers.

We notice, with pleasure, the successful organization in this city of the association to obtain artificial limbs for our brave soldiers who have been mutilated in the defence of liberty and honor. The happy idea was originated by the Rev. Dr. Marshall, of Mississippi, who was nobly supported by many public-spirited persons, so that, in a very few days, not less than fifty thousand dollars were collected.

It is creditable to the ingenuity of our people to say that, spite of many difficulties, it is probable that a sufficient number of good and serviceable legs can be manufactured in the Confederacy. The society is now in successful operation. The president, Dr. Marshall, with a central directory, has made some progress in contracting for artificial limbs, whilst the treasurer, Wm. H. Macfarland, Esq., is ready to receive contributions from those who are disposed to aid in a praiseworthy object. Maimed soldiers, desiring to obtain artificial limbs, will apply to Medical Director Carrington, Corresponding Secretary, who will give due attention to their claims.

TRANSACTIONS OF ASSOCIATION OF ARMY AND NAVY SURGEONS.

Debate on Tetanus.

Association of Army and Navy Surgeons, January 30th, 1864.

Surgeon-General S. P. MOORE, President, in the chair.

The President called the Association to order at seven, P. M. Surgeon DAVIS presented the minutes of the last meeting, which were read and approved.

Surgeon MICHEL read a letter from Surgeon E. S. GAILLARD, communicating information of a death from chloroform. The anæsthetic was inhaled about thirty seconds, when the patient was attacked with convulsions; the pupils were extraordinarily dilated, and the pulse suddenly ceased at the wrist. Artificial respiration and cold effusions were freely used. The autopsy disclosed extreme cerebral congestion. The heart was not examined. The same preparation of chloroform had been used with impunity.

A letter from Surgeon CHAMBLISS was also read, defining tetanus to be a general tonic contraction of all or most of the voluntary muscles, increased by paroxysms; while tetanic

spasms are partial contractions of the muscles of a part. True tetanus is the disease in its most general, aggravated and advanced form; whilst tetanic spasms are the threatening premonitory or milder form. Of 1,241 cases of gun-shot wounds treated in the second division of the Winder hospital, but one case of true tetanus occurred, and that took place on the twelfth day after the injury.

Another letter read, from Surgeon THOM, defined tetanus as the fully-developed disease affecting the whole system, and tetanic spasms as confined to certain muscles of the extremity. Patients affected with the latter often recover, but, in his experience, traumatic tetanus was invariably fatal. He had seen in the last two years but three cases of tetanus and all died. The symptoms in one case occurred twelve days and in another nine days after injury.

From Surgeon HABERSHAM two interesting cases of tetanus from gun-shot wounds were communicated by letter. One a flesh wound, the other a compound fracture of fibula; both commencing with trismus and ending in general tetanus; one on the eleventh day, the other on the twelfth, from injury; the former terminated in death in a few hours, the latter in twenty-four hours.

Surgeon MICHEL now moved that the general treatment of gun-shot wounds be taken up for reconsideration, as not having been entirely disposed of at the last meeting.

The Chair considered that the subject had been already discussed and disposed of, and, on submitting the motion to the Association, it was overruled. The President then introduced, as the subject for debate, the differences between "Tetanus and Tetanic Spasms."

[It is to be regretted that the term *traumatic spasm* had not been employed in preparing the question submitted to the Society for discussion, rather than the more indefinite expression tetanic spasm; the former having been already adopted into the literature of the subject as a scientific expression, while the latter phrase is vague and requires explanation.—ED.]

Surgeon CAMPBELL said he would relate a case formerly under treatment, heretofore classed by him under the head of partial chronic tetanus, but which, perhaps, might be better termed one of "tetanic spasms." Some years ago, a negro man, wounded in the neck, at the explosion of a gun on board the United States ship Princeton, was brought to Augusta, Georgia, where, a year after the accident, he came under his surgical care. He was affected with partial convulsions of the muscles of the neck and back, and was relieved by the exhibition of sedatives. Patient stated that this was not his first attack; he had had "lock-jaw" shortly after the wound, and spells of such symptoms as constituted the present attack even since his recovery. The attacks returned at intervals of from two or three weeks to as many months. He administered two and a half grains of quinia and ten grains of precipitated carbonate of iron, three times a day, for several months. He was very willing to accept the term tetanic spasms as a proper designation to characterize it. The treatment had been suggested by the regularity of the relapses, simulating the course of the disease to the hebdomadal periods observed by intermittent fever and other paroxysmal diseases, confessedly so amenable to these means of tonic medication. With regard to the nature of tetanic spasms, he considered them as identical, in nature and pathology, with tetanus; the former being applied to tetanic phenomena affecting a restricted portion of the muscular system—the excito-motory are being shorter—and the symptoms less acute in their character; while, in true tetanus, the entire muscular system was subjected to universal tension.

Surgeon McCaw observed, that he could not discern any essential difference between the local and general symptoms

contemplated in the question before the society. He believed spasms of the kind referred to, developed in consequence of a wound, exhibited the disease in its mildest form. Any excitation of the peripheral nerves produces an excito-motory action, and, however limited in extent, it is the same phenomenon as disclosed in the more extensive contractions, sometimes of the whole body. For him, this was a distinction without a difference.

Surgeon MICHEL remarked, that he recognized an important difference between true tetanus and tetanic spasms, however difficult it might be either to define or explain the conditions upon which their dissimilarity depended. One fact was certain, for experience had taught it, that, while tetanus was justly regarded as the most rapidly fatal malady with which the surgeon has to contend, tetanic spasms yield to ordinary treatment, or to no treatment at all. If the convulsive movements be restricted to the injured limb, and we find them in nowise compromising the general condition of the patient, we need entertain no decided misgivings as to his safety. He considered it necessary to draw some distinction between these morbid exhibitions in estimating the ratio of cures which might be recorded in the extensive statistics received from the army. Without discrimination in this particular, and without impressing the subject upon the mind, results of treatment and cures would be recorded which would be found strangely at variance with what is known regarding the mortality in this disease. His military surgery had furnished no case of tetanus, but in civil practice he had seen several. One of these would illustrate the point under discussion: a negro girl, with an oyster-shell wound of the foot, was seized with spasms in the same limb, which progressed until well-marked tetanic contractions of the part were developed; but at no time was there any trismus, and never did the spasms become general. The attack lasted two weeks. Chloroform not being then in use, opium in large doses was given with no improvement, until combined with musk, which he had been advised to try. The girl recovered; and at the time, a beginner in the profession, he was very sure he had cured a case of tetanus, and that musk was the remedy. Sometime after, alluding to the cure, a colleague informed him that the same girl had been a patient of his, and that he had attended her with spasms of a like character from the cut of a lash, which had scarcely left a mark. He believed true tetanus nearly always commences with trismus, and not in local contractions of the wounded limb.

Surgeon WILSON said he was ready to endorse Dr. CAMPBELL's views of the pathology of tetanus; as, under any of the forms in which it declares itself, the pathology was always the same. These conditions were differences of degree, not of kind.

Surgeon McCaw asked if the gentleman would state what was the pathology of tetanus. Hysteria also was a reflex action of the nervous system. He had seen hysterical patients thrown into violent spasms, which assumed all the forms described under the names of opisthotonos, emprosthotonos, &c. He considered Dr. MICHEL's case as possibly one of those hysterical cases simulating tetanus. Hysteria, as it were, was a mere functional derangement, though it was almost impossible at times to see any difference between it and tetanus, from the condition into which the patient is thrown. Tetanus, however, was an organic disease. If called upon for a prognosis in the spasms of which we were speaking, he supposed he should have to wait; and should the patient recover, he would say he had had "tetanic spasms;" but if he died, of course it was "tetanus."

Surgeon CAMPBELL replied, that having referred the two affections of tetanus and tetanic spasms, to a pathological condition which he thought identical, by no means indicated

that he professed himself willing to state with confidence, precisely what that pathology is. He would, however, state, that in his opinion, tetanus was an exhibition of exalted reflex-motory action, dependent upon a morbid condition of the spinal marrow, rendering the spinal centres unusually susceptible to external impressions, and less obedient to the determinations of the will. Whether this abnormal condition of the spinal marrow was inflammatory in its character, or belonging to those less appreciable conditions termed molecular, the present state of our knowledge did not determine; but there are many observations on the dead subject which lead to the conclusion, that at least, in some instances, the inflammatory action at the wound is propagated along the course of the nerve leading from the wound, on to the point at which it is implanted into the spinal marrow. The neurilemma is often found intensely inflamed, and decided congestion is not uncommon both in the spinal marrow and its membranes. Corroboration of this pathology of tetanus is found in the fact, that, all the most successful plans of treatment are such as this view would suggest, namely: such measures as are best calculated to quiet or obtund both peripheral and centric irritation, as sedatives, anæsthetics and topical application of ice, to the spinal column. Tetanus was one kind of reflex action, requiring a peculiar condition of the organs acted upon, and probably a *peculiar* cause. Hysterical cases not only simulated tetanus, but as far as identity of phenomena, organs involved, and rationale of production are concerned, they are indeed *true cases of tetanus*. Resulting in recovery, and being based on an hysterical condition of the nervous system, did not weaken the grounds for classing them among tetanic cases. We do not hesitate to call a case of deranged gastric digestion manifesting all the symptoms of dyspepsia, by that name, because it happens to arise from uterine derangement. Dr. C., also adduced, in illustration, a case of sudden and complete blindness, lasting for weeks, which resulted from menstrual obstruction. This case, he said, no one would hesitate to call amaurosis, on account of its having arisen from uterine derangement, and no more should we be unwilling to designate the case described by Dr. MICHEL as tetanus, because it happened to be based in hysteria. He considered the phenomena identical in both cases, notwithstanding the diversity of cause and prognosis.

Surgeon MICHEL rose to say, that it was evident that all morbid manifestations, dependent upon perverted nervous action, must exhibit resemblances so striking as to place them, with every propriety, in one class, since preternatural exaltation of the nervous centres could display itself only by excitatory or secretory acts. It was important, however, not to confound such phenomena, amidst all the possible variations they present, under one generic appellation—such as tetanus, for example—because the same apparatus was involved in their production, or because the physiological explanation seemed to be the same. Excitatory impressions, if continued long enough to evoke centric action, would, of course, result in the evolution of inco-ordinate muscular contractions, which, strangely interesting to state, always presented peculiarities so manifest as to permit the recognition of very constant differences in these exhibitions of reflex function. These peculiarities fully justified the long list of names, designating many different diseases—as hysteria, chorea, hydrophobia and tetanus. They all depended upon the reflection of nerve power from the central axis; yet who, on entering a patient's apartment, would fail to detect any of these aberrations of nerve force from the yet more common convulsions dependent upon gastric and intestinal irritation? Depending on a common series of spinal ganglia for their development, does not make them identical, nor even of the same import as to prognosis; for, under the influence of precisely the same *causes*, results

of very different significance present themselves, where it is impossible to ascribe the favorableness or unfavorableness of the issue, the danger or safety in the case, to *degree* any more than to *kind*. They all constitute different *kinds* of reflex action. Hysteria is one form, tetanus another. He could not admit that one was essentially an organic disease and the other a functional. Pathology revealed no constant, nor even frequent, change in the cord or its membranes. [Surgeon McCaw, it may be too minute to be discovered.] I do not admit that pathology which the microscope cannot detect. In some instances, meningeal inflammation had been noticed; but much more frequently no morbid trace whatsoever could be discovered, and this circumstance led many to suppose that the disease depended upon simple hyperæmia of the neurilemma of the notochord, untraceable in the necropsy. Nor could he see any real evidence of the identity between the spasms sometimes noticed in injured limbs, or in a special group of muscles in the limb, consisting in alternate quick and jerking contractions and rapid relaxations, and true tetanus. Besides, it should be remembered that muscular irritability disclosed itself in two very distinct phenomena, described as *clonic* and *tonic* contractions. In tetanus, the contractions were of the tonic variety; slow and long-continued decurtations of the muscular fibres, with gradual relaxations; but, in the jerkings and twitchings of groups of muscles referred to, the muscular contractions were rapid and frequent, and more of the clonic order.

Surgeon BROCK recounted the case of a man whose leg was crushed by the wheel of a car, and amputated a few hours after. The wound soon presented an unhealthy appearance and sloughed extensively, when, twelve days after sloughing commenced, tetanus supervened. The trismus, opisthotonos and general rigidity of the whole muscular system were very marked; constipation and anorexia were among the prominent symptoms; treated with purgatives and opiates in large doses, he recovered. One other case of tetanus was transferred to another hospital, and one died the day after admission.

Surgeon CHAMBLISS related the case of a boy who injured his back by falling from a fence, in whom the spasms commenced on the seventh day, first in legs and thighs, though he was able to walk about until general tetanus was developed, of which he died about seven days after.

Surgeon BOLTON stated that it had been his misfortune to meet with many cases of tetanus, all of which had proved fatal with the single exception of that related by Dr. BROCK. Of these, one was a case of idiopathic tetanus, which occurred under circumstances which forbid the possibility of its having been occasioned by injury or exposure. The patient was an inmate of the Virginia penitentiary. No cause could be discovered for the attack. It resulted fatally. He thought there was a difference between the spasms of true tetanus and tetanic or tetanoid; those resembling the spasms of tetanus, for example, the tetanic spasms of hysteria. He agreed with Dr. MICHEL in the distinction which he drew between tonic and clonic spasms, and by attention to this he believed the diagnosis could usually be made between the spasms of tetanus and those of other diseases. He called attention to another important element of diagnosis, viz: the constitutional symptoms. The pulse becomes full and strong, and the temperature of the skin increased. When the constitutional symptoms set in, no local treatment will be of any avail; even amputation has rarely been of use; and if the entire ablation of the injured part be insufficient to remove the local cause, it is not probable that hypodermic injections at the point of the injured nerve will prove more efficacious.

The hour having expired for the evening's session, the further discussion of the subject was referred to the next meeting, and the Association adjourned.

CHRONICLE OF MEDICAL SCIENCE.

ART. I.—*Remarks concerning the Hygiene of Military Hospitals, extracted from a paper read before the Imperial Academy of Medicine at Paris, by M. H. BARON LARREY. Paris, 1862. [Translated from the French and abridged by Professor J. L. CABELL, University of Virginia, Surgeon P. A. C. S.] (Concluded.)*

The author next alludes to disinfectants, recommended as a means of remedying, in some measure, the defects of ventilation, and gives the preference to permanent fumigations of chloride of lime diluted with water, by means of vessels scattered through the wards and passages, the chloride being removed every three or four days.

"A substantial, nourishing diet exerts the happiest influence on the cure of patients exhausted by hemorrhages, by suppuration, by abstinence, and by protracted confinement in bed. It is this, in combination with efficient ventilation, which contributes to the excellent sanitary condition of the hospitals in London, where the subjects of surgical operations are treated from the first day according to the English regimen—wine, boiled beef, and opium in fractional doses. This regimen, omitting the opium, furnishes good results in the country and in field hospitals against debilitating diseases, and particularly against scurvy."

[I have obtained excellent results in cases of protracted suppuration connected with compound gun-shot fractures of the extremities by the use of *malt liquors*, when distilled spirits had altogether failed, and had even proved hurtful. They promote sleep, they are directly nutritious, and they increase the appetite and the power of digestion. If their manufacture were encouraged, very much of the alcoholic stimulus now uselessly given to hospital patients might be saved.—J. L. C.]

Daily exercise by convalescents produces a double advantage for themselves and for the sick, who are benefitted by their absence from the ward.

A premature discharge of the convalescents from hospitals exposes them to relapses or other accidents which may yet be more grave than the primary disease.

It is only by sending such convalescents to other places that the hospital, too, can be preserved from the dangers of over-crowding.

The great mortality of military hospitals is a vast and complex question deserving the most serious attention. I do not now propose to speak of the excess of mortality due to the military profession, the subject of an interesting work by M. Tholozan, but there are other conditions inherent in the hospital system. "It is incontestible," says M. Michael Levy, "that the mortality is proportionally greater in the large than the small hospitals. We can never congregate many thousand sick men into one establishment with impunity. From 1,000 to 1,200 is a maximum beyond which it becomes very difficult to avoid the danger of infection." We may note also insufficient means of hygiene, defect of aëration, imperfect quality of food, and other influences already incidentally mentioned, as so many causes of a high mortality. "We must add to these causes the direct effect of a great number of the major surgical operations." [More likely to be followed by dangerous and mortal complications, as pyæmia, sloughing, phagedænia, &c., in hospitals than in private quarters.]

But the predominant cause of hospital mortality will always be found to depend on the influences resulting from crowding a number of men into one building.

Among the numerous facts which demonstrate this proposition I will cite but one at present. It belongs to the history of Paris in 1814. The ratio of mortality in the military hospital of Val-de-Grace at Paris was increased ten fold as the consequence of

excessive crowding on the occasion of the return of the army, together with the foreign troops. At length the proper authorities provided for regular evacuations and for all other hygienic measures having for their object to diminish the crowd, and the excess of mortality did not re-appear. On that occasion the great abattoirs, [establishments in Paris for the butchering of cattle for the markets,] transformed into temporary hospitals, exhibited the most satisfactory results.

All the documents which we possess on the medico-chirurgical history of the Crimean campaign; the special publications of the numerous French and English writers; the statistical tables drawn up with the greatest care, for the French army, by M. Chener; and especially the unpublished official reports of inspectors Michael Levy and Baudens—all bear witness, from different points of view, to the fatal effects of over-crowding in the ambulance hospitals and in hospitals proper. M. Michael Levy signalized the formidable congregation of 2,100 beds in the Hospital at Pera, and the ravages occasioned at Varna by epidemic cholera and hospital gangrene. He demonstrates that all hospitals having more than 800 beds become infected, and that the accumulation of the wounded, of patients who have undergone operations, those suffering from dysentery, and the subjects of scurvy, may engender contagious and fatal diseases. He cites the case of an over-crowded ship having 1,200 men on board, of whom 350 were attacked with cholera, and 72 died in forty-eight hours.

Inspector Baudens clearly proves that the collection of too large a number of patients in a hospital is a fruitful cause of grave fevers, dysentery, purulent resorption, hospital gangrene, and of typhus. He substantiated the existence of such consequences, both in the Crimea and at Constantinople, and persistently recommended the most rational hygienic measures; the thinning out of the beds; the disinfection of the wards, and the discharge of the sick; regretting that the medical and administrative authorities could not appreciate the full force and import of the word "over-crowding."

Numerous typhoid diseases appeared towards the close of the year 1855, and multiplied rapidly among the French and English troops. They were much more aggravated during the more rigorous winter of 1856, among the French and Piedmontese, by the over-crowding of camps, the ambulance hospitals and hospitals proper, which they sensibly diminished, and then disappeared in the English army, under the influence of a better system of hygiene and despite the infectious emanations of the neighboring cemeteries. Results entirely analogous were observed in the hospitals of Constantinople, and sometimes in the same hospital, in proportion as the crowding, the immediate cause of typhus, increased or diminished. Thus the French hospital of Rami Tehiflich, one of the most favorably situated in the whole city, remained in a satisfactory sanitary condition by the limitation of the number of beds to 900, under M. Cazaler, and subsequently under his successor, M. Ganeau. But, at a later epoch, another physician of great respectability and merit, having less fears of the consequences of over-crowding the sick and trusting in the material resources at his command, increased the number of beds to 1,200 and then to 1,400. The hospital, from that time kept filled to its limits, soon became a focus of typhus fever, and a frightful mortality ensued, which spared neither the attendants nor the medical officers, of whom the officer in charge, who had over-crowded the hospitals, was one of the first victims. M. Cavillon, who succeeded him, was soon attacked with this fatal epidemic, and barely escaped with his life in losing his reason.

The military hospitals at Pera, nearly as much over-crowded as that at Rami-Tehiflich, suffered in a precisely similar way.

M. F. Jacquot estimated the mortality from typhus fever in all the hospitals at Constantinople as fully one-half of the entire mortality.

On the other hand, in one of the hospitals which has never been over-crowded, the number of deaths from typhus was only one-tenth of the entire mortality, which, too, was lower than in preceding years at the same epoch. In like manner, the civil hospital at Pera, perfectly organized for 90 beds, and having received, between the 1st of January and 30th of April, 300 sick, including 100 cases of typhus, had not a single case of typhus developed in its wards. Of the 100 received, 15 only died.

Results not less conclusive were observed in the ambulances [field hospitals] in the Crimea. Intended for from 200 to 400 men each, they were sometimes filled to more than double that number. Thus a field hospital of the first division of the third corps, 15 out of 16 medical officers were taken sick. In other field hospitals, better arranged and especially not crowded, typhoidal affections were exceptional cases. Finally, in field hospitals, which were invaded by typhus, the progress of the disease was always arrested by increasing the number of tents and widening the intervals between them.

The mortality in the French army, during the entire Crimean campaign, was 67,056 out of 399,268 troops, more than half being due to disease. Of 160 Sisters of Charity employed in the hospitals at Constantinople, 68 had typhus fever in 1856; 14 were treated in more or less crowded hospitals, and 11 died; whilst of the other 54, transferred to an infirmary at Galata, the hygienic conditions of which, especially the absence of over-crowding, were perfect and satisfactory, not one proved fatal.

The author of this report being ordinary surgeon of the French Emperor, and having been appointed chief surgeon of the French army for the Italian campaign in 1859, carried out the principles deduced from the experience of the Crimean war and was rewarded by results of the most gratifying character. He ascribes these results to the persistent "application of one radical measure, namely the distribution of the wounded in numerous small hospitals. No matter how small, in preference to packing or crowding a large number of men into a few buildings, however large." It is to be remembered that this policy of scattering the sick is completed by a measure necessary to it, that, namely, of occasionally removing the sick and wounded from one locality to another.

One capital fact must be signalized as an irrefragable proof of the beneficial influence of the sanitary measures put in practice in Italy, and it is said that there were no epidemics, properly speaking, during the whole of that campaign.

Conclusions.

The following conclusions are deduced from the foregoing statement:

The multiplied and complex influences of the vitiation of the atmosphere of hospitals proceed from over-crowding and determine the most disastrous effects. This proposition cannot be too frequently reiterated, if we would avoid the error of substituting secondary questions for the fundamental one.

All partial measures are demonstrably insufficient. The suppression or the closure of certain hospitals, presumed to be insalubrious, would be useless if it could be tried. Neither would it suffice to modify the larger buildings, in order to assimilate them to the small proportions of others. But the necessity of improving all by multiplying their number, in order to reduce the number of beds in each one, and to insure a wide dissemination of the sick and wounded to such a degree that, when epidemics prevail, it would be better to close certain hospitals than to fill them—the necessity of a generous nourishment and a regular system of supervision, with respect to the enforcement of the rules of hospital hygiene, such are the ends at which we should aim.

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CIRCULAR.

SURGEON-GENERAL'S OFFICE, }
RICHMOND, Oct. 31, 1863.

The following Prospectus meets with the hearty approval of the Surgeon-General, and the medical officers of the Confederate States service are earnestly requested to co-operate in the undertaking, and to forward their names, enclosing subscriptions, with as little delay as practicable.
S. P. MOORE, Surgeon-General.

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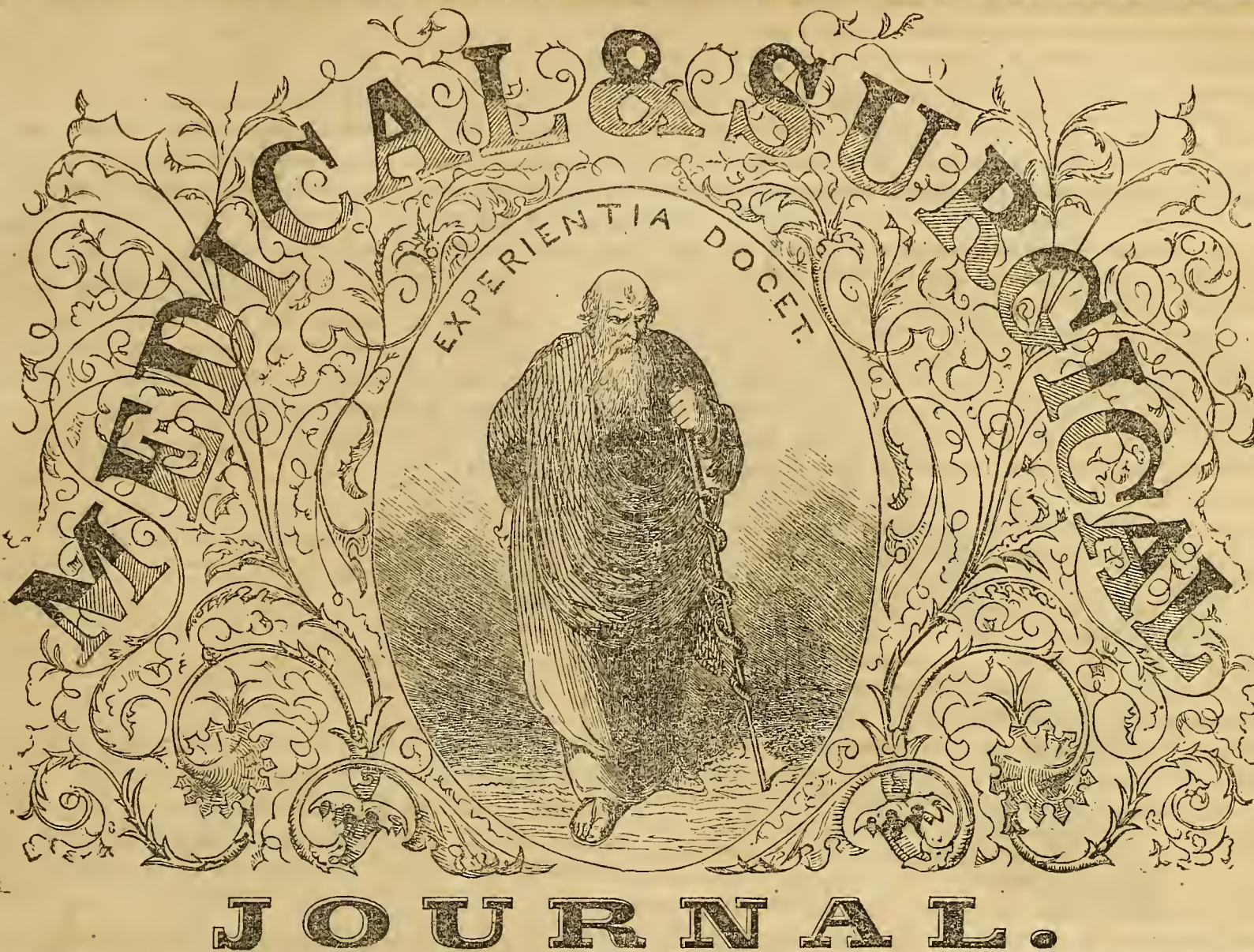
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CONFEDERATE STATES



JOURNAL.

VOL. I.

RICHMOND, APRIL, 1864.

No. 4.

ORIGINAL COMMUNICATIONS.

ART. I.—*On the Microscopic Anatomy, Physiology and Pathology of the Human Liver.* By H. D. SCHMIDT, Surgeon P. A. C. S. (Illustrated.)

[We commence the publication, in this number, of extracts from Dr. Schmidt's paper, confining ourselves more particularly to those passages where may be found the original views and observations of the author. The entire essay is worthy of perusal; and it is curtailed, simply because its length would exclude from our pages other matters of practical interest, which it is one of the principal objects of the Journal to circulate among its readers.—ED.]

On the Microscopic Anatomy of the Human Liver.

The liver consists of a complex and intricate arrangement of arteries, veins, capillaries, hepatic cells, ducts, nerves, lymphatics, and also a system of small follicular and racemose glands, held together by a capsule of fibrous tissue. The blood by which it is supplied, is brought there by the portal vein and the hepatic artery, and carried off by the hepatic veins. The two former enter the organ at its inferior surface,

after which they divide and sub-divide repeatedly, until their ultimate ramifications extend throughout its interior. The smallest branches of the latter originate in the parenchyma; by joining each other they form larger branches, which, in their turn, by often repeated junctions, form those few large trunks that join the vena cava at the posterior surface of the liver. The smaller branches of the hepatic artery and portal vein mostly run at right angles with those of the hepatic veins. The finest branches of the hepatic duct take their origin in the parenchyma in a manner that will be described hereafter. They also, by joining each other repeatedly, form larger ducts, until the common hepatic duct is formed. The latter issues from the organ at the same place where the hepatic artery and portal vein enter, and after having been joined by the duct of the gall-bladder, becomes the common bile duct, (ductus communis choledocus,) which empties into the duodenum. The portal vein, hepatic artery and hepatic duct are always found accompanying each other. The branches of the artery are often seen winding around those of the vein, and those of the duct still more frequently around those of the artery and vein. The duct, however, is usually near the artery, (see Fig. I. *a*, *b* and *d*.) In company with nerves, lymphatics and a system of small glands to be described hereafter, the portal vein, hepatic artery and hepatic duct are en-

closed in a fibrous sheath. The latter has usually been known by the name of the "*capsule of Glisson.*" But in contradistinction to a similar one enclosing the hepatic veins, and to simplify the demonstration, I have termed it the "*capsule of the portal vessels.*" This sheath is analogous to the sheath of blood-vessels and nerves elsewhere, its office being only to hold the

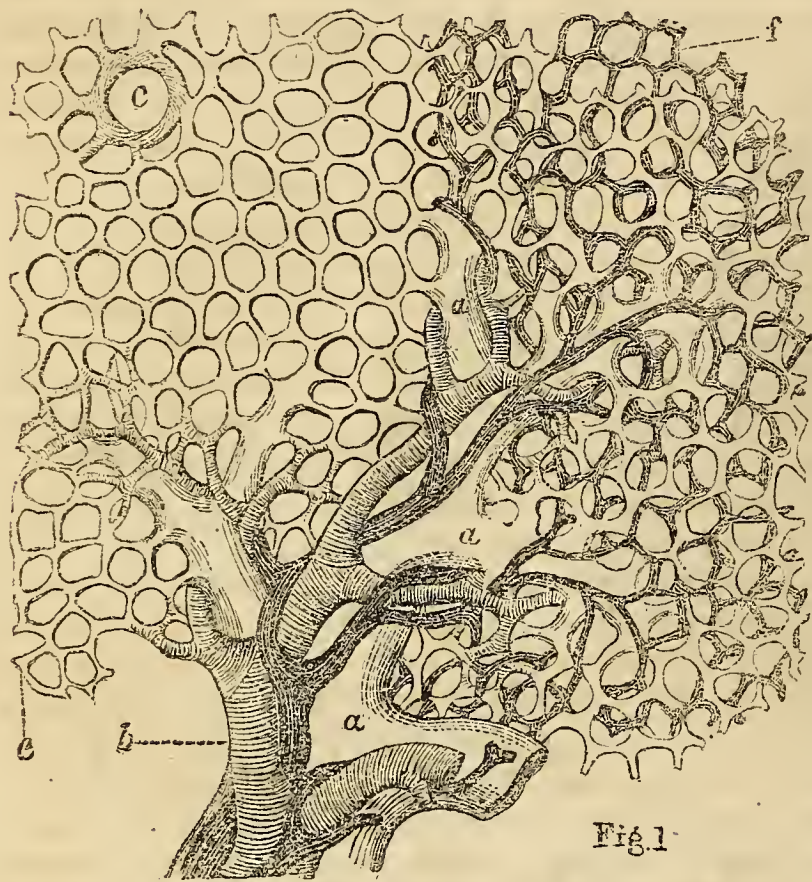


FIG. I.—Diagrammatic representation of the relationship of the vessels in the parenchyma of the human liver: *a*, terminal branches of the portal vein; *b*, terminal branches of the hepatic artery; *c*, transverse section of a minute hepatic vein, showing how its branches commence in the capillary network (*e*), in which those of the portal vein and hepatic artery terminate; *d*, minute branch of the hepatic duct; *e*, capillary network, communicating with the portal vein, hepatic artery and hepatic vein; *f*, network of biliary globules, in which the minute branches of the hepatic duct take their origin. This network of capillary vessels has been strongly shaded, as if injected by a dark coloring matter, so that it may be readily distinguished from the capillary network (*e*) through which the blood circulates. (Magnified from 150 to 200 diameters.)

vessels, &c., together and impart strength to them. It is a continuation or process of the common fibrous capsule that surrounds the whole liver. A similar process proceeds from the latter to enclose the hepatic veins, which I have termed the "*capsule of the hepatic veins.*" We see, therefore, that the liver, like other organs, is surrounded by a fibrous capsule from which processes proceed into the interior to hold its component parts in their respective places; for it must be remembered that these capsular processes extend to enclose even the smallest branches of the vessels and duct.

If we examine the lungs, especially of some of the inferior animals, as the hog or sheep, we find that, independent of the pleura, they are surrounded by a fibrous capsule from which processes proceed, dividing the organ into smaller portions or lobules. In the latter animals, I have frequently separated these lobules without injuring, in the least, the parenchyma, as proved by subsequent minute injection. The separation is

effected by carefully tearing the areolar tissue, (or processes of the common capsule,) by which the lobules are held together. This being done, the small portions remain only connected to each other by the bronchi and blood-vessels that enter. Thus, we see that the whole lung is actually composed of a number of small ones, the aggregate communicating by the ramifications of the bronchi and blood-vessels. Each individual lobule may be regarded as a lung in miniature. In man, and in most other animals, this separation is not so easily effected. Now in the liver of the hog and a few other animals this same arrangement exists; that is, from the capsule surrounding the whole organ, and those enclosing the blood-vessels and duct, small processes proceed to divide the parenchyma into small portions, similar to that in the lungs. These subdivisions have been termed by authors "*acini,*" and each of them represents a liver in miniature, just as in a racemose gland, each pouch is a gland in itself, though the ducts of many join to form one duct that belongs to all. The smaller branches of the blood-vessels and duct ramify between and surround the closed capsules of the acini until, at last, their finest branches penetrate the latter to form a communication with the parenchyma within.

On account of the above-mentioned arrangement in the liver of the hog, it has been regarded as more suitable for investigation, and thus has always been resorted to by investigators. And it is due to this fact that the idea of these subdivisions or "*acini*" still pervades the medical mind in connection with the human liver. I have already stated that acini exist in the liver of the hog and two or three other animals. In the human liver, as I shall show, no *acini* exist; the capsules extend only over the ramifications of the vessels and duct, without entering the parenchyma for the purpose of subdivision; and I repeat once more, that these capsules are analogous to the sheaths of blood-vessels, nerves, &c., elsewhere, with which they are also continuous externally to the organ.

The *parenchyma* of the liver consists of capillaries, hepatic cells, free nuclei and granules; the microscopic lymphatics, also, originate in it. Its anatomy is as follows: the finest branches of the portal vein and hepatic artery terminate in a net-work of capillary vessels; from the latter, the finest branches of the hepatic veins take their origin. Thus the blood of the portal vein and hepatic artery is carried to the same net-work of capillaries, where the arterial becomes mixed with the venous. After having traversed the capillaries, it is carried off by the hepatic veins and poured into the ascending vena cava. Besides this net-work of capillaries, through which the blood circulates, there exists another. They are independent of each other; that is, they do not communicate. In the latter, the finest branches of the hepatic duct and lymphatic vessels originate. The interspaces or meshes, formed by the two networks, are filled up by the hepatic cells, free nuclei, and granules. (See Figs. I. and II. and explanation.) The capillary vessels, forming the net-work that gives origin to the finest branches of the hepatic duct and lymphatics, I have termed in a former publication

"biliary tubules," for the reason that they carry bile, and not to have them confounded with the capillaries that carry blood. The hepatic cells are very irregular in size and form, so much so that there are hardly two exactly alike to be found; the only characteristic they all possess, in common, is their polygonal form. A nucleus, containing a nucleolus and some granules, exists in their interior; they also contain a number of granules and sometimes even fat globules. When the hepatic cells are examined while they are floating in water, their numerous surfaces can distinctly be observed, (Fig. II. *f*.) for in a quiescent state they appear almost flat. Besides the nuclei, contained within the hepatic cells, there are many that are free, (Fig. II. *g*.) which seems to indicate that the cells are formed by the primary mode of cell formation.



FIG. II.—Diagrammatic representation of the relationship of the capillary blood-vessels, biliary tubules and hepatic cells of the parenchyma of the human liver: *a*, terminal branch of a portal vein; *b*, minute branch of a hepatic duct; *c*, network of capillary blood-vessels, in which the portal vein and hepatic artery terminate; *d*, network of biliary tubules, in which the minute branches of the hepatic duct commence; *e*, hepatic cells, occupying the interstices of the two capillary networks; *f*, hepatic cells as they appear when floating in water, exhibiting their polygonal form; *g*, free nuclei; *h*, free granules. (Greatly magnified.)

Lodged within the meshes of the areolar tissue of the capsules of the liver is a very extensive system of small follicular and racemose glands, the arrangement of which is peculiar. The interior of the latter is lined by an epithelium of hexagonal cells, containing a large nucleus; a number of free nuclei are interspersed. These glands join and communicate with a network of vessels, or rather ducts, forming large meshes, very irregular in size and form. (See Figs. III., IV.

and V.) The diameter of these ducts varies considerably; for while in one place it may not be larger than that of a capillary blood-vessel, in another it is four or six times as large. I consider these vessels to be the ducts of the glands, as they are lined by the same epithelium of hexagonal cells. In places where the diameter of the duct is large, the epithelial cells are as large as those lining the glands; but as the former decreases, the cells also decrease in diameter. Now from this network fine branches proceed to join the larger hepatic ducts. Thus it seems that the secretion of the small glands is poured into the ducts, (forming the network of large meshes,) whence it is by their branches carried and discharged into the larger hepatic ducts, in a manner that I shall describe directly. But as the epithelium lining the ducts is the same as that of the glands, they undoubtedly elaborate the same secretion as the latter. This system of secreting glands and ducts exists especially in the capsule at the inferior surface of the liver, extending throughout the capsule of the portal vessels, and becoming more sparse as the latter become smaller in diameter; it also exists in the capsule of the hepatic veins and in the walls of the gall-bladder.

The hepatic ducts are lined by a mucous membrane with a columnar epithelium; but, as they become smaller, this epithelium is gradually changed into a squamous one. The cells composing the epithelium decrease in diameter as the ducts become smaller, until the ultimate ducts are only lined by an epithelium consisting of nuclei. When the interior of one of the larger hepatic ducts is laid open, a considerable number of small "cul-de-sacs" may be observed. They are formed by a duplicature or semi-circular fold of the mucous membrane. The margin of the fold is turned towards the interior of the liver, indicating that its object is to arrest the bile in the "cul-de-sacs." In the bottom of the latter are found a number of dark points, which are the orifices of the small ducts proceeding from the network of "biliary glands" (as they may be styled) above described. (See Fig. III. *b* and *c*.) The deduction from these facts would be, that the bile, as it flows from the interior of the liver, is arrested within the "cul-de-sacs" for the purpose of being mixed with the secretion of the system of biliary glands. Theile, a German anatomist, first described these glands, and assigned to them the office of secreting mucus. Beale considered them to be small "diverticuli" for the bile, and their office similar to that of the gall-bladder. I regarded both of these theories as erroneous; for if these were their true functions, they would be lined by a mucous epithelium. On the contrary, I am rather inclined to think that they secrete one of the constituents of the bile which becomes mixed with the latter in the "cul-de-sacs."

The finest branches of the *lymphatic vessels* of the liver originate, as has already been mentioned, within the parenchyma, in the capillary network of *biliary tubules*, being the same network in which the finest branches of the hepatic duct commence. They then join each other to form a plexus within the capsules. From this, other branches proceed, which, repeatedly joining each other, at last form the larger lymphatic vessels. They accompany the portal vein, hepatic

artery and duct, to leave the organ at its inferior surface. In the common capsule, surrounding the whole organ, the finest branches of the lymphatics, after having originated from the biliary tubules, form a beautiful network of large meshes;

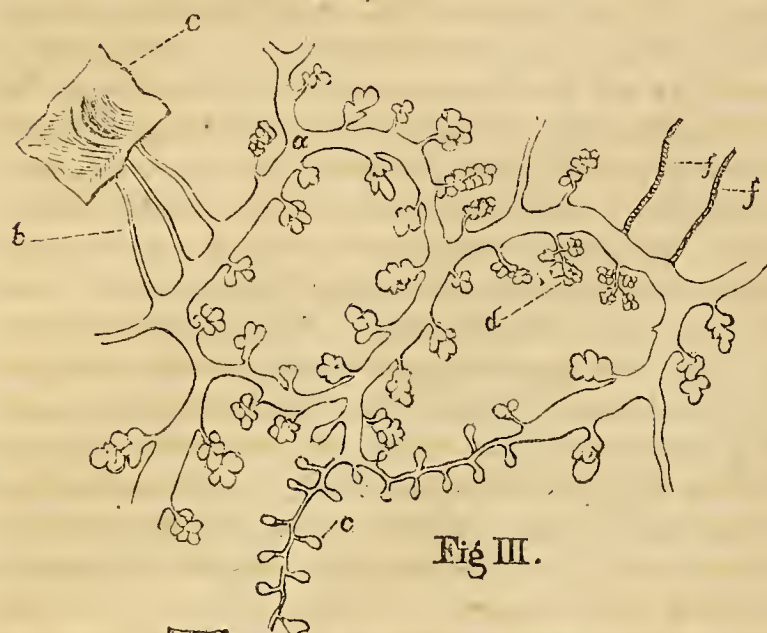


Fig III.



Fig IV.



Fig V.

FIG. III.—Diagrammatic representation of two meshes of the network, formed by the ducts of the hiliary glands: *a*, ducts by which the network is formed; *b*, small ducts, communicating with the "cul-de-sacs," formed by a semi-circular fold of the mucous membrane of the larger hepatic ducts; *c*, a small portion of mucous membrane, containing a "cul-de-sac" (the orifices of the small ducts can be seen within); *d*, racemose hiliary glands; *e*, follicular glands; *f*, minute lymphatic vessels, joining the ducts of the system of biliary glands. (Magnified from 50 to 75 diameters.)

FIGS. IV. AND V.—Racemose hiliary glands of different forms, showing their epithelium of hepatic cells. (Greatly magnified.)

from it larger branches proceed to form still larger ones by repeated junctures, until they at last leave the organ at its posterior surface. The finest branches of the lymphatics are as fine as, if not finer, than a capillary blood-vessel, and, like the larger ones, are provided with valves. The latter fact is proved by the numerous constrictions of their walls after they are injected with coloring matter. By means of minute injections, I have also discovered that some of the microscopic lymphatic vessels join minute hepatic ducts, and others join the network formed by the ducts of the biliary glands. The lymphatics, therefore, communicate with the hepatic ducts in three different ways. Firstly, directly by originating from the same network of *biliary tubules* in which the finest branches of the hepatic duct commence; secondly, directly by small lymphatic branches joining *small hepatic ducts*; and, thirdly, indirectly by small branches joining the network of *biliary glands*, which, in its turn, communicates with the larger hepatic ducts.

The *hepatic artery*, while accompanying the portal vein and

hepatic duct, sends off small branches to supply the coats of the two latter vessels. These branches ramify within the different coats, and terminate, as anywhere else, in a capillary network, from which small veins arise, which ultimately join branches of the portal vein. In the same manner the system of biliary glands is supplied with blood. The latter organs, with their network of ducts, are surrounded by a capillary network of fine meshes, in which small branches of the artery terminate and small branches of the portal vein commence. Each glandule is embraced by a loop of capillary vessels.

The *nerves* of the liver are derived from the pneumogastric and sympathetic nerves, and form a plexus around the blood-vessels and duct. But when the branches of the latter become very small, they are only accompanied by one nervous filament. I have not traced the nerves to their termination, but I have seen their filaments or fibres still accompanying arteries as small as one-thousandth of an inch in diameter.

The *gall-bladder* is a pear-shaped sac, whose narrower extremity terminates in a duct, which joins the hepatic duct. Like the latter, the gall-bladder is lined by a mucous membrane, the inner surface of which is thrown into reticulated folds, similar in shape to the villi of the duodenum. Between the larger folds, smaller ones of the same character exist. Their object is to increase the secreting surface. The epithelium consists of columnar cells of considerably larger size than those forming that of the hepatic duct. The mucous membrane lining the duct of the gall-bladder is thrown into semi-circular folds, which, alternating in position with each other, form a spiral. The object of this arrangement evidently is to arrest the too rapid flow of bile. The biliary glands, with their network of ducts, are also found around the walls of the gall-bladder and its duct. The gall-bladder has been considered to be a diverticulum for the bile; but, while acting as such, the above-mentioned folds of its mucous membrane and the extraordinary size of its epithelial cells indicate an additional function. The secretion which it furnishes may, perhaps, cause some alteration in the bile, and thus become an essential constituent of the latter.

I have thus far described the mere outlines of the microscopic anatomy of the human liver. As the object of this treatise is to present to the medical practitioner the true relationship of the component parts of the liver, as a foundation for his pathology and treatment of the diseases of that organ, I consider it unnecessary to describe and discuss the numerous minutiae which are interesting only to the anatomist, for it would complicate the subject. In the memoir, spoken of in the "prefatory remarks," they are fully described and illustrated.

Remarks on the Physiology and Pathology of the Liver.

In connection with the anatomy of the liver, I now propose to survey, briefly, its physiology and pathology. At present, it is universally understood and accepted that the liver secretes bile and forms sugar. But the exact manner in which this is effected is still only obscurely known. A portion of the blood, carried to this gland by the hepatic artery, is expended in

supplying the coats of the blood-vessels, ducts and lymphatics, and the nerves and biliary glands with nutrient materials, and, after having done so, returns as venous blood to branches of the portal vein. But the rest, if not the greater portion, is discharged by the terminal branches of the artery into the same capillary blood-vessels into which the terminal branches of the portal vein discharge their venous blood; and it is thus that the arterial and venous blood become mixed. The circulation of the liver is, therefore, somewhat similar to that of the foetus and reptiles. If we now consider the greater rapidity with which the blood moves in the artery than in the vein, we might infer that the quantity of arterial blood carried to the capillaries is, at least, equal to that carried there by the portal vein. Thus, as far as the arterial blood is concerned, the liver corresponds to all other secreting glands, *i. e.*, in being supplied by arterial blood. But in as far as the venous blood is concerned, it deviates from all the rest. Now, the question arises: does the arterial blood contribute its elements to the formation of bile? Ever since I commenced to investigate the subject, I have been inclined to think that it does. And especially lately, my view has become more confirmed by a suggestion made to me by my friend, Surgeon J. F. Fauntleroy, a member of one of the Army Medical Examining Boards. His idea is, that, after the principles essential to the elaboration of bile have been abstracted from the blood, carbon, oxygen and hydrogen, in quantity corresponding to the equivalents of sugar, would be set free, and, being in a nascent state, readily combine to form sugar, within the blood-vessels, which, as soon as formed, was carried immediately to the heart. Now, it is a difficult matter to determine where the sugar is formed—whether by mere chemical laws in the blood-vessels, as Dr. Fauntleroy suggests, or by a higher vital process, that of organic cells. The opinion I hold is in favor of the former. For if the sugar was formed within the cells, it would have to be discharged by them, and again penetrate the walls of the capillaries to reach the blood, which would be a complicated process. However, in regard to this, it might be answered that the presence of sugar in the parenchyma of the liver is proved by chemical test. Undoubtedly it is. But does the parenchyma of the liver consist solely of secreting cells? Are there no blood-vessels present? A glance at the diagrams will show how intimately they are interwoven with each other. And where is the anatomist who could dissect them so nicely as not to remain connected with each other, and in a quantity large enough to be subjected to chemical test? If I remember rightly, one of the experiments of that distinguished physiologist, Claude Bernard, the very man who first discovered the presence of sugar in the liver, was that, in order to completely remove the blood from the organ, he inserted canulae into the portal vein and hepatic artery, connected with a long elastic tube. The latter was then elevated to a certain height, where it communicated with a reservoir of water. Thus, the water would descend through the tube into the blood-vessels by its own weight, which, of course, could be regulated by appropriate stop-cocks, so as to keep up a constant current through the organ. After this had been

continued for several days, the experimenter, thinking now that all the blood must have been removed, took some of the parenchyma to subject it to chemical test, by which, as might be expected, he detected still the presence of sugar. This sugar, however, was undoubtedly contained in the blood remaining behind in the blood-vessels. For there exists no means by which the blood may be completely removed from an organ except by chemical injections, which, of course, will also in some degree destroy the latter. The blood that remains in the smaller blood-vessels after death, imperceptible in quantity as it may be, is yet sufficient to present one of the greatest obstacles in the process of minute injection. Every anatomist, who is experienced and skilled in this department, will agree with me on that point. In my own experience, which has been extensive, I have at least found it so. I will for the present, until the contrary is proved, admit then that the sugar is formed within the blood, and is consequently no secretion, but a mere formation. But I am also aware that there are many facts existing, which still might, in some degree, render this admission untenable. Some of them are that sugar, (in the normal condition of the animal,) is found only in the blood, while it is circulating through the liver, and for a certain distance beyond. And that the peculiar kind of food, as Bernard clearly proved, whether nitrogenous, starchy, fatty, &c., on which the animal is fed, does not affect nor arrest the formation of sugar. But even admitting and considering these facts, they would in no way materially affect Dr. Fauntleroy's suggestion; for the food of which it is composed has first to undergo a considerable alteration during the process of digestion, before it can be absorbed by the capillaries (and *perhaps* the venules) of the abdominal viscera to be carried to the liver, and when reaching the latter, it has been completely reduced to the simplest organic elements, which are common to all varieties of food. It would be immaterial, therefore, whether these principles, as the albuminous, for example, were at one time constituents of meat or of vegetables. In every case, after the principles essential to the formation of bile were abstracted by organic cell action, the elements remaining behind in a nascent state might continue to form sugar. I am inclined to think that both venous and arterial blood furnish the constituents of the bile. Still, if this could be denied, I would rather decide in favor of the arterial, because the bile is more a secretion than an excretion, and for the reason that all other secreting glands are supplied only by arterial blood. It is accepted by physiologists that the liquid portion of the bile is subservient to the process of digestion, and that it is ultimately re-absorbed in the intestines, the coloring matter only being excrementitious, and carried off with the faeces. It might be suggested, therefore, that both the arterial and venous blood contribute elements to the secretion of bile, while the venous alone, containing a large quantity of carbon, contributes to the formation of sugar, and also furnishes the coloring matter, the latter being most likely derived from red blood-corpuscles, disintegrated during their passage through the spleen. But there is still another office the arterial blood evidently has to

perform: this is to promote the organic cell action; or, in other words, to form the cell and keep it alive by furnishing oxygen, and also the material from which the cell walls are built. To the extent of my knowledge, there is no instance in which cells or tissues are formed from a fluid exuding from the veins. The exact process by which the secretion of bile is carried on is difficult to determine, and I by no means pretend that the explanation I shall give is strictly correct, but from the facts I have observed, the following seems to me to be the most probable: In referring to what I have said on the subject of secretion, we find that the liquor sanguinis, exuding from the capillary blood-vessels, is the plasma from which all cells and their secretions are formed, and it contains the elements essential to that purpose. I also stated that, as soon as the cell is fully formed, the chemical process of secretion, under the organic influence of the nucleus, commences within its cavity, and that the cell bursts to discharge its contents as soon as the secretion is finished. The same I consider to take place in the liver. A portion of the liquor sanguinis, containing the elements essential to the secretion of bile, and the formation of cell-walls, exudes from the capillary blood-vessels. From this the cells are formed, and within their cavity the bile is elaborated. When the latter is finished, the cells burst, and their contents are discharged into the interspaces of the capillaries. The bile is now absorbed by the network of "biliary tubules," and carried to the finest hepatic ducts, from which it finally passes into the larger ones to find its outlet from the liver. (See Figure II.) The debris, or remnants of the cell-walls, is dissolved in the secretion, but the nuclei remain, probably to serve for the formation of new cells, by having another cell-wall formed around them. This latter view I have taken by finding many free nuclei in examining portions of the parenchyma. It is true I also observed cells and their nuclei in a state of partial subdivision, which would indicate a multiplication of division; but these instances are so few that I regard them as exceptions to the rule. Now in all tissues or secreting organs, in a normal condition of things, all the plasma that exosmoses from the blood-vessels is not consumed either for the purpose of secretion or reconstruction, but some remains behind as a surplus. What then becomes of it? It is re-absorbed by the lymphatics along with the waste that at the same time is taking place.

In order to understand this physiological process properly, we must not imagine it commences at one time and terminates at another, when, after the bursting of all the cells, and the removal of the bile by the hepatic ducts, the liver would necessarily collapse, and its size diminish. On the contrary, the process is going on continually, to a certain extent, but is especially active during digestion. And to corroborate this fact, I have only to refer to the various sizes, or stages of development, in which the hepatic cells are found when a small portion of the parenchyma of the liver is examined under the microscope. (See Figure II.)

There is another important fact yet, in connection with the physiology of the liver, brought to light by my researches.

It is the communication existing between the lymphatics and the hepatic ducts. The question, what is the object of this triple communication? arises, but up to this day I have not been able to solve it. However, my venerable friend, Prof. Samuel Jackson, of the University of Pennsylvania, shortly after I made the discovery, built an hypothesis upon it. He presumes that the nature of the bile, after having been secreted by the cells, is very viscid, and that in order to render it more fluid, and promote its flow through the hepatic ducts, the lymphatics pour some of their watery contents into the latter. That the bile, while contained within the hepatic cells, is of a very viscid nature, I have proved satisfactorily by the tearing of hepatic cells by means of my microscopic dissector (a delicate instrument constructed for similar purposes), under high magnifying powers of the compound microscope. In such instances, when the cell-wall was torn and drawn asunder, the contents could be drawn into filaments, like thick molasses.

The probable function of that system of "biliary glands" I have already stated in connection with their anatomy. I will, however, repeat here that I regard them as secreting some of the fluid constituents of the bile, which are discharged and mixed with the latter in those small "cul de sacs" already described.

[To be continued in next number.]

ART. II.—*A New Test Paper, suggested by Private J. C. Wharton, Atlanta, Ga., detailed in Purveying Department.*

In the course of a number of experiments with the extract of logwood, some singular properties were observed, of which the following may prove of interest and value:

It was found that by adding to a solution of extract of logwood (consisting of one ounce to one pint of water) an equal volume of ox-gall, exposing the mixture for several hours to the rays of the sun, and then setting it aside for three or four days, a compound was produced very sensitive to the action of both acids and alkalies—the former making a crimson or yellow change, as the acid is strong or weak, while the latter renders the red color of the solution violet or blue. This property would seem to make it valuable as a test for both, as it is only necessary to prepare paper with it in the usual manner, by spreading the compound upon it. It possesses the combined virtues of both litmus and turmeric, and is apparently as sensitive as either.

What change the bile produces in the hæmatin (which is beyond doubt the active or sensitive principle) it is hard to determine, unless it be that the small amount of free alkali in bile serves to give the blood-red color to the compound, which is thereby rendered a better ground for the development of the colors (red, yellow or violet) which acid or alkali produces. There is an objection which might be urged against it as an infallible test. It is that, on account of the tannic acid in the extract, some metallic salts, as of iron,

copper, &c., re-act in a manner somewhat similar in appearance to alkalies. This may be guarded against by adding to the preparation a few grains of ferrocyanide of potassium (which must be freed from alkalinity), when it will become an easy matter to distinguish them, as ferrocyanides of the metals will be formed on the paper, while alkalies are unaffected by it. Some striking results take place when solutions of several of the salts are applied, and may be worthy of note. Borax re-acts at first as a decided alkali, and soon afterwards the paper is bleached, a margin of violet being left around a white spot. This effect is so remarkable as to characterize it from all other salts yet tried, and may prove to be a sure test of borax and boracic acid. Oxalic acid also acts in a peculiar way, showing an acid re-action with a dark margin. The marginal lines in many other instances are of importance, indicating frequently a combination of two substances (as in sesquichloride of iron) and sometimes of three (when an acid and two or more metals are combined).

Another singular fact may as well be mentioned: The odor of musk or amber is quite evident in the solution, and shows a chemical change which is worthy of investigation.

P. S.—Since the report concerning test paper was made, further facts have been observed which are seemingly so uniform in their occurrence as to merit a careful examination. The principle of these are the changes produced by the action of the three mineral acids, viz: sulphuric, nitric and hydrochloric, as also by different admixtures of them, all of which, when strong, form spots of such characters as to distinguish each from the other. This may be seen by letting fall upon the paper a drop of each, and need not be described. Nitric acid re-acts in a manner which, considering the difficulty that has always existed in testing for it and its salts, is most important and valuable if it proves peculiar to it. Even a few drops in a thousand or more of sulphuric acid make the distinguishing mark, known by its greenish yellow centre with a crimson margin. The paper is rendered more sensitive to this change by first moistening it with the tongue. In testing for nitrates it is best to wet the paper with a solution of the salt (as, for instance, nitrate of potassa), and then apply a drop of sulphuric acid, when its central spot and marginal lines will indicate the presence of nitric acid which is set free. If chlorate of potassa be used instead of the nitrate, the appearance will be so nearly the same as to be mistaken for it.

This is a point upon which more light is needed, and, it is hoped, will engage the attention of Southern chemists.

In using the paper the changes, which in some cases are not immediate, will be hastened by a gentle heat. Its hygro-metric moisture may also be driven off by gentle heat in others to advantage, and sometimes increased by the saliva or a little water.

[The logwood, a vegetable red, renders the paper sensitive to alkalies; the acid re-actions takes place with the various elements of bile, and these will be so numerous as to produce confusion and diminish the value of the test paper. The odor

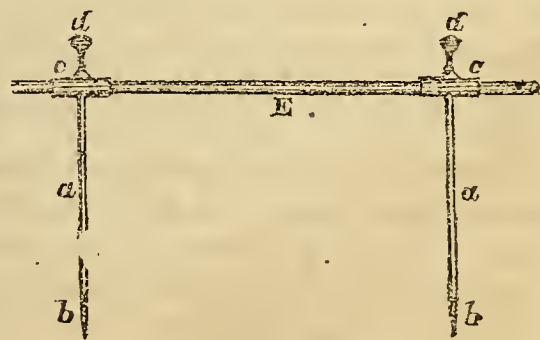
of musk is entirely due to the bile and is always noticed in the preparation of inspissated ox gall.—Ed]

ART. III.—*New method of treating Ununited Fracture of Long Bones.* By JAMES BOLTON, Surg. P. A. C. S.

My observations on cases of gun-shot wounds of the thigh, with fracture of the bone, have impressed me strongly with the unsatisfactory character of the ordinary methods of treating them. The difficulties encountered are: 1st. The great mortality in this class of injuries; 2d. The frequent movement of the limb for the purpose of cleansing it, producing severe and exhausting suffering, and interfering with the union of the bone; 3d. The splintered condition of the fractured ends of the bone interfering with accurate adjustment; 4th. This condition, together with the exposed state of the fractured ends, favoring necrosis and exfoliation; 5th. The long period usually required for union prohibiting the continuous use of extension and counter-extension; 6th. The contraction of the muscles during this long period causing shortening and angular displacement; 7th. Bed-sores produced by long confinement of the patient in one position. The hazards of this injury are fearful. Amputation is only an exchange of risk of death by exhaustion, for risk of death by shock. If the limb be saved, it will almost certainly be shortened, and frequently be misshapen; and this may happen to such an extent that the limb may be an incumbrance. In view of these difficulties, I respectfully ask attention to a new method by which I propose, as far as practicable, to obviate them. The indications are to secure co-aptation, adaptation and quietude. The method by which I propose to fulfil these indications is explained in the following sketch of a case which occurred in my practice in December, 1853: An Irish laborer had ununited fracture of the femur. The ends overlapped more than two inches, and were kept asunder by intervening soft tissue. The only method which seemed applicable was that of sawing off the ends of the fragments and wiring them. The feeble condition of the patient and the great mortality attendant upon this operation determined me to endeavor to devise some other method of treatment. In the meantime, efforts were made, which proved futile, to co-apt and fix the fractured ends. I then employed the following method: Two steel rods, *a*, three inches in length,

were each cut at one end into a screw, *b*, three-eighths of an inch long. To the other end was attached, at right angles, a hollow cylinder, *c*, having on its upper surface a screw, *d*.

A steel rod, *e*, five inches long, completed the instrument. The patient was anesthetized, and powerful extension was



used until the limb was brought to the proper length. The point of a scalpel was then thrust down to each fragment, one inch from the extremity, and a hole was drilled in each as far as the medullary canal. In these holes the rods, *a*, were screwed. The ends of the bone were then adjusted by pressure upon one rod and by traction upon the other. When adjustment was complete, the cylinders, *c*, were in a line with each other. The rod, *e*, was then passed through them and secured by the screws, *d*. This rod was outside of the integuments, and was of necessity parallel with the shaft of the bone. The only motion then possible was a rotary one upon the screws. This was prevented by straight splints upon opposite sides of the thigh. The same thing might have been accomplished by applying another instrument at right angles to the first. The limb was placed upon a pillow. No exhaustion to the patient was produced, and he stated that he felt more comfortable than he did before the instrument was applied. It was retained upon the limb twenty-one days. It was then removed, and straight splints alone used. Eight days afterwards the patient died from a cause unconnected with the use of the instrument. The lower fragment was found necrosed at the upper extremity, evidently from violence done in tearing it from its adhesions, whereby a portion of the periosteum was stripped off. The points into which the rods were screwed were sound, and the ends were united by a thick cartilaginous bridge. Besides the advantages stated, the instrument produced another beneficial effect, viz: stimulating the bone to throw out uniting osseous matter, as in the method adopted by Dieffenbach, who drilled the ends of the bones, and drove in ivory pegs. Malgaigne adopted a method somewhat similar to mine. He passed under the limb a strap attached to a steel bow, placed over the limb, having a long screw passing through the centre of the bow. This screw, having a pointed extremity, he brought to bear upon a displaced fragment, and, by turns of the screw, forced the fragment into position; but the fragments were then in a state of almost uncontrolled mobility.

The instrument is evidently applicable to other long bones, and to the lower jaw.

NOTE.—It may be objected that by this method a simple fracture may be converted into a compound one; but a careful consideration will lead to the conviction that this result ought not to occur. In the case of gun-shot wound the fracture is already compound.

ART. IV.—*Resection of Upper-half of Humerus* Reported by JOHN STAINBACK WILSON, Surg. Jackson Hospital.

The following case, recently admitted into one of the wards under my charge, is deemed sufficiently interesting to report:

Isaac Sykes, aged 26, a musician in Stuart's Cavalry, was wounded at Gettysburg, 3d July, 1863, and taken prisoner. On 8th of March, 1864, he came under my observation, having arrived on the late flag of truce boat. Wounded, gun-shot, the ball passing antero-posteriorly through the upper

part of the humerus, just below the axillary folds, and of course fracturing the bone extensively, as the operation will show. Resection was performed on 4th of July, the day after the injury. The whole of the upper-half of the humerus, including the head, was removed.

Present condition: When the muscles are relaxed, the arm dangles by the side, and can be moved about in any and every direction. Indeed, it has very much the appearance of a pasteboard toy or "jumping Jacob," and my first impression was that the limb was a useless appendage, and that amputation would have rendered the condition of the patient more desirable. But, on a closer examination, I found that the functions of the biceps, triceps, and, in fact, of all the principal muscles of the arm, were unimpaired, while all the movements of the fore-arm were *perfect*. When the muscles mentioned were contracted, so as to give a *point d'appui* for the action of the muscles of the fore-arm, all its motions were made with the greatest facility, while those of the arm itself were preserved to a truly wonderful extent. The arm could be carried forward, backward, and adducted with ease.

The removal of the attachment of the deltoid of course interfered with the elevation of the member; but the retention, to a great degree, of all the other movements, and the entire integrity of the functions of the fore-arm, gave the young man a limb which justified him in saying that he "would not take anything for it." He stated that "the Yankee doctors" at first condemned the operation, and "wanted still to cut off his arm." But, fortunately for him, he would not consent.

This triumph of conservative surgery is due to the skill of Surgeon Metcalf, of General Hampton's staff.

The case suggests for consideration the following question: If the whole of the *upper-half* of the humerus can be removed with such good results—if removal of the *lower* part of this bone be the most satisfactory of all the resections—and if resection of the *middle* portion be attended with less difficulty in its performance, and less interference with muscular attachments than in either the upper or lower part, *should not resection be preferred to amputation in almost every case of gun-shot wound of the arm not greatly lacerating the muscles, and involving the principal artery and nerves?*

ART. V.—*Chronic Aphonia cured during an attack of Pneumonia.* By THOMAS KINCHELEY, Assistant Surgeon P. A. C. S.

I respectfully offer the following report of a case pneumonia, connected with an aphonic affection of some ten months' standing. I do not offer the case as one possessing any extraordinary merit, but because of the happy result to the patient in recovering his speech under such singular circumstances.

Private Vernon Cook, company "H," 13th Georgia regiment, twenty-one years old, sandy hair, blue eyes, and florid complexion, nervous temperament, enlisted on the 18th May, 1862, in the 11th Georgia regiment. While at second battle

of Manassas, he was attacked with rubeola, he took cold by imprudent exposure, and the disease affected his right lung, the pain in which was of constant annoyance, with cough. The lung, however, did not suffer from any serious affection, but his general health became much impaired and debilitated. He was finally discharged from the service. He returned to his home in the State of Georgia, and, after six months, he felt strong enough to re-enlist, which he did in the 13th Georgia regiment.

He enjoyed very good health up to the battle of Chancellorsville. He was severely shocked and knocked prostrate by a shell in that battle. He expectorated much blood, and suffered considerably from pain in his right breast from the effect, and about four days afterwards he became hoarse, and lost the power of speaking above a common whisper—from which he did not recover, but all his other symptoms improved, and he has since then been an inmate of the hospitals. He entered this hospital about two months ago, and was one of the patients, unable for active duty, appointed as a guard. He performed his duties for about one week, when he was attacked with pneumonia of the *right lung*, involving quite extensively both lobes. He had considerable fever, and quite a quick and full pulse. Notwithstanding his physical health was feeble, he was treated upon the tartar emetic system, the effect of which occasioned sickness at stomach, with some vomiting. During which feeling of depression he observed, to use his own words, "something broke loose in his breast and run up his throat." He, however, recovered at the time the free use of his speech, with as clear and distinct expression as he ever possessed, and which he still retains, though not entirely recovered from his pneumonia. This patient had been annoyed since the battle of Chancellorsville with *aphonia*, and not until the pneumonia from which he suffered had he been able to obtain any relief, though innumerable remedies had been tried upon him.

Whatever some may think of the seat of aphonia being in the larynx, and involving the vocal chords, as *Wood* explains, yet such a case as this cannot fail to suggest reflections which may aid in throwing additional light on the somewhat obscure pathology of this disease.

CONFEDERATE STATES HOSPITAL REPORTS.

Eleven Cases of Compound Fracture of Cranium by Gun-shot Wound treated at Chimborazo Hospital.

Case 1.—Private W. H. Hogan, company "K," 14th Virginia infantry, was wounded on the 15th of January, 1863, by the accidental discharge of a musket in the hands of a friend. The ball entering on the postero lateral-portion of the right side of the head, passed forward and upward across the parietal protuberance, emerged, making a wound about three inches in length, exposing the bone the whole length of the wound, and producing fracture of the parietal bone. Was admitted on the 23d of January. At that time his mental faculties were perfect, and there was very little constitutional disturbance; no paralysis. A triangular portion of the bone had been removed, through which opening the

brain was protruding. He stated that when first wounded there was complete paralysis of the left side. Cold-water dressings were applied to the wound, and a compress to the protruding portion of the brain which caused it to slough. The bowels were kept open, and the patient kept on light diet. The bone necrosed in the whole track of the ball, and was removed, exposing the brain for two inches, after which the wound healed rapidly, with a depressed cicatrix. This patient was returned to duty on the 21st of July, perfectly cured, with the exception of an occasional headache, which was generally relieved by an aperient.

Case 2.—Private H. Dixon, company "D," 30th North Carolina regiment infantry, was wounded June 30th, 1862, in the superior portion of the left parietal bone. Both tables of the bone were fractured and depressed. There was slight paralysis of the right side. He was in a dull, heavy stupor, from which it was difficult to arouse him. When aroused, he spoke very indistinctly. His mind was so much disordered he could not tell his name, nor the State from which he came. The loose pieces of bone were removed, and cold-water dressing applied. He remained in this condition for six days, at which time he began gradually to recover his mind and speech. He was furloughed on the 25th of August, almost entirely relieved of his injury and its effects.

Remarks.—This case is one which would seem to have demanded the use of the trephine, but, guided by the experience of Stromeyer, McLeod, and other military surgeons of high reputation, it was decided not to operate. The entire recovery of this soldier justified the omission of the operation and the course of treatment that was pursued.

Case 3.—Private H. Thompson, company "D," 16th regiment Georgia volunteers, wounded at Chancellorsville, May 3d, by buckshot penetrating left temple, just above zygomatic process, one inch posterior to outer portion of orbit. Complained of much pain in neighborhood of wound, with slight tumefaction and small discharge of healthy pus therefrom. Pulse natural. No fever. Bowels moved once daily. Cold applications were regularly kept up until May 15th, when symptoms of oppression appeared. Stertorous breathing. Respiration slow. Pulse 70. Mind much confused. Mouth and tongue quite dry. No appreciable dilatation of pupils. Orifice of wound enlarged to permit free exit to the discharge. Head shaved and ice freely applied to scalp. Purged freely; after which, one grain of mild chloride of mercury was administered every two hours.

On the 18th, patient slightly better; tongue moist; breathing natural; pulse natural; patient decidedly better. Discontinued calomel, but kept cold applications to the head. From this date, patient continued to improve and apparently recovered from effects of wound, with very little evidence of impairment of intellect, until May 30th, when he suddenly became comatose, and died at nine o'clock, P. M., next morning.

Autopsy, on the same day, revealed a buckshot, much flattened, imbedded a quarter of an inch in base of anterior portion of middle lobe of left hemisphere of the brain. The ball had passed through the wings of the sphenoid bone, and a considerable quantity of healthy-looking pus flowed freely into the cavity of the cranium, from the temporal fossa, through the orifice. A complete sac had invested the ball and also a small fragment of bone, which was carried with it. There was very slight congestion of the "pia mater" and "arachnoid." The immediate cause of death and sudden seizure on the 30th of May were rather obscure. The most probable supposition is that pus, forming along the track of the ball, had flowed in upon the brain, through the orifice made by the ball in its entrance, instead of making its escape through the external wound, which was partially closed.

Case 4.—Private O. Ayres, company "A," 22d regiment Virginia volunteers; aged 24; occupation a farmer; wounded November 27th, 1863. Admitted, November 30th, with V. S. of right side of head, fracturing outer table of right parietal bone. When admitted, the following symptoms presented, viz: slow pulse, slight fever with coma, leading us to suspect fracture of both tables of parietal bone and pressure upon the brain; but, upon a closer examination, it was discovered that the outer table alone was fractured to the extent of one and a half inches.

Treatment.—Bowels were well opened with calomel and gamboge, followed by a large dose of castor oil.

November 30th.—Bowels having been well moved, patient was better. Coma, to some extent, abated. Cold applications were constantly applied to the wound, and hydr. sub. mur. pushed to ptialism. Patient improved under this treatment, and is perfectly rational. Coma subsided.

December 5th.—Erysipelas developed itself over head and face. The parts were well painted with iodine, and tinct. ferri mur. administered internally.

9th.—Patient much improved; erysipelas disappeared; wound granulating healthy, and mind unclouded.

15th.—Patient almost entirely recovered.

25th.—Furloughed and well.

Case 5.—G. W. Gifford, company "F," 1st Tennessee regiment, wounded at the battle of Seven Pines, May 3d, 1862, by ball in right side of head, involving the coronal suture, with considerable loss of both tables of parietal and frontal bones. The brain was seen to pulsate long after the reception of injury, without the operation of trephining, and smaller pieces were thrown off at subsequent periods; but, when discharged from hospital, osseous structure had covered nearly two-thirds of original opening. Patient was returned to duty 2d February, 1864.

Case 6.—William Campbell, company "B," 42d Virginia regiment; gun-shot wound of head; ball, entering left temporal bone, was removed from left occipital bone, injuring and exposing the brain for nearly two inches.

Treatment.—Constant application of cold water to the head, keeping the system under the influence of morphine, and using febrifuges and cathartics as occasion required. The patient's health improved and the wound healed rapidly. When furloughed, the wound was entirely covered by granulations and cicatrization, no unfavorable symptoms having intervened.

Admitted Nov. 30th, 1863. Furloughed Dec. 30th, 1863.

Case 7.—Private A. G. Powell, company "H," 4th North Carolina, wounded at Chancellorsville 3d May, 1863; gun-shot wound of head; the ball entering a little to the right of the sagittal suture, fracturing the outer table of the parietal bone. The ball, in its course, was divided by the broken edge of the bone; a part, passing in, tore away the outer plate and rested on the inner table, fracturing it and compressing the brain, causing great pain and convulsive movements. Free incision was made and the ball removed with a pair of small forceps, giving instant relief to the patient. He steadily improved and was furloughed 6th June, 1863.

Case 8.—J. Q. was wounded May 3d, 1863, by a musket ball, striking the anterior portion of the parietal bone, a little to the left of the sagittal suture. When admitted in Chimborazo Hospital, No. 4, May 6th, he was able to walk about. Some tumefaction of the scalp was apparent, and, on introduction of probe, some depression of the outer table was detected. No symptoms of cerebral disturbance. The case was treated as a flesh wound.

May 10th.—Symptoms of compression of brain: stertorous breathing, slow pulse and stupor, from which he was aroused with difficulty. Free incisions made in scalp, exposing the cranium at the seat of injury, which was found to be frac-

tured, comminuted and depressed. Eight pieces of bone removed by elevator and forceps, without use of trephine. Some of these pieces had been forced, through the meninges, into the brain. On careful examination, the fact that no pieces of bone and no foreign substance remained in the wound was established; the inner edges of the fracture were smooth, without spicula. Edges of scalp approximated; cold-water dressings applied, and purgative doses of calomel administered, with consequent catharsis.

May 11th.—Symptoms of compression of brain have disappeared.

12th.—Suppuration freely established.

14th.—Granulation commencing; case progressing favorably.

15th.—Paralysis commencing in right arm and soon advancing to complete hemiplegia.

19th.—patient died without convulsion. Death sudden, with symptoms of spasm of larynx.

Case 9.—W. B. was wounded October 12th, 1863, by a musket ball striking the left parietal bone, about midway between top of ear and vertex, glancing a little downwards and backwards, and making its exit in a track of one and a half inches in length. Admitted in Chimborazo Hospital, No. 4, October 19th. Could give no account of himself; seemed timid, shy and easily agitated; slow of apprehension; slept but little; secretions regular; pulse 60 to 70.

October 22d.—Scalp freely incised from wound of entrance to that of exit. Cranium found to be fractured, comminuted and depressed. Portions of bone removed with probe and forceps, without trephine.

24th.—Hernia cerebri of size of common marble: the divided edges of the meninges can be distinguished upon the base of the cerebral protuberance.

26th.—The protruded brain is disappearing by suppuration.

31st.—Cerebral tumor removed by suppuration. Patient somewhat more intelligent; otherwise no change.

November 3d.—Abscess pointing over occipital bone a little to left of median line and about four inches from vertex, which was opened and discharged. On examination, fracture of occipital bone discovered; outer plate of bone elevated and a piece of lead closely impacted between the plates; all attempts to remove it without trephining ineffectual. The ball had been split when impinging upon the parietal bone, and a portion of it has passed within the cranium, making its partial exit through the occiput. The patient is improving in intelligence and in general health.

January 31st, 1864.—Patient doing well. All the wounds in scalp cicatrized; depression in parietal bone marking site of fracture; prejection of outer table of occiput in place of fracture; the lead remains impacted between the tables of the bone.

Patient has recovered strength; general health good; intellectual faculties improved; he is still somewhat child-like, and is easily confused in mind.

Case 10.—Wounded June 29th, 1862. Admitted June 30th. The ball entered near the centre of the os frontis, and escaped, a week after his admission, at the posterior part of the fauces. This patient recovered promptly without any unpleasant circumstances attending his case, except the loss of the sense of smell. Furloughed July 30th, 1862.

Case 11.—Wounded December 13th, 1862. Admitted December 16th. Gun-shot wound of head, with fracture of parietal bone. When admitted, there was fungus of the brain, with paralysis of the left extremities and sphincters. With the exception of the removal of a few small pieces of bone, there was no other surgical interference in this case. He was sufficiently recovered to leave the hospital on furlough for his home, in South Carolina, on the 11th of March, 1863.

C. S. Medical & Surgical Journal.

RICHMOND, APRIL, 1864.

AYRES & WADE.....PUBLISHERS AND PROPRIETORS.

Artificial Limbs.—How to Make Them.

The establishment of an association to provide, gratuitously, artificial limbs to all officers, soldiers, or sailors, who have been maimed in the service of the Confederate States, has been already noticed in these columns. The fact of its successful operation should not be without its effect on operative surgery in the future.

Up to this stage in the war, the principal and paramount consideration with each conscientious surgeon, who amputated a limb, was that great deformity, or a speedy and miserable death, could only be prevented by this mutilation. The possibility of the early adjustment of an artificial substitute for the limb by a skillful mechanic was not then realized as it will be in future, and will now compel the surgeon to look beyond the operation and recovery from the wound he makes. Already, nearly ten thousand maimed men in the Confederate States carry with them stumps which will be examined soon by those specialists, who are experts in this limited field of anatomy and mechanical philosophy. The stumps will be all sure but silent witnesses of skill and watchfulness, or inexperience and neglect.

These considerations should cause more deliberate attention to be paid to the place of operation, whether of election or necessity, the various methods of amputation, the progressive steps of each, and the natural or possible changes in the several structures as bearing on the desired result, viz: a *successful stump*, or one that will enable the patient to wear an artificial limb with comfort or convenience. Its uses being for locomotion and the bearing of pressure, a good stump should, as far as possible, be long enough to secure abundant leverage, be well covered, perfectly even, and of the shape of a truncated cone, to equally diffuse the pressure and support over the entire circumference. The socket of the artificial limb, being well padded, is made to fit this stump in every portion of its periphery, the extremity being free in the interior cavity. The places of election are authoritatively pointed out in operative surgeries, but I have seen no clearer or more comprehensive instructions on this or kindred subjects than those published by Palmer, of Philadelphia, in "Instructions to operators for formation of suitable stumps in amputation of the leg and thigh." The surgeon, unfortunately, rarely has this power of election, and in such circumstances, must leave as much substance as he can.

Artificial limbs resemble those of the *insecta* in that the skeleton is without. Their structure is generally of wood, covered with leather, but sometimes of heavy wire-cloth. Strong and well-secured joints at points corresponding with those in the lost limb, move with ease and exactness through

the medium of cords, levers and springs of metal or gutta-percha, the whole being in symmetry and function a faithful representation of the natural leg, with the exception that the artificial leg, being but the work of man, is a more simple apparatus. The complex parts and functions of the natural leg could not be so constructed and co-ordinated.

Palmer, of Philadelphia, obtained the prize medal at the World's Fair, in London, in 1850, for the best artificial leg. The Academy of Medicine, of New York city, in 1860, after a careful examination of specimens of all well known varieties, pronounced one made and patented by Dr. Bly, of Rochester, as quite as simple as any, and superior to all in possessing valuable improvements in the lateral motion given the ankle-joint. Among those there inspected were Selpho's, Wilcox's, Ord's and Jewett's legs. The artificial leg found on the body of Colonel Ulric Dahlgren, U. S. A., was of Jewett's patent, January 6th, 1857, and May 7th, 1860. Its construction was very simple, but its weight too great. Its substance is wood, painted flesh color, and heavily enamelled to resemble porcelain; the metal joints were silver-plated and very strong. Thus its symmetry and finish gave it an appearance of elegance; but its mechanism and action are inferior to that of legs manufactured under some other patents.

These legs can be made very easily by any good locksmith, gunsmith, instrument-maker, or ingenious mechanic, and good specimens are now being made at various points in the Confederate States, by persons recently inexperienced. Others, as Hanger, of Staunton, and Wells, of Charlottesville, claim to have made valuable improvements on any hitherto known patent. They certainly make legs combining lightness, strength and symmetry, that are worn with comfort and satisfaction by officers and men in the field and in every station of life, civil and military.

But the manufacturers now in operation are not able to fill one-tenth of the demand that will be made on the association. To meet them, a manufactory on a large scale will be established, and the directors of the association referred to have also invited manufacturers, throughout the Confederacy, to send in to them, at Richmond, Va., as soon as practicable, specimens of their work, with proposals, stating the number they can furnish, and the time and place of delivery, with the cost of the same.

The United States Patent Office Reports, in every large library in the Confederate States, contain diagrams of all patents of artificial legs and their description, and an experienced draughtsman in Richmond (Mr. H. M. Baker) will furnish copies of all of them, at a moderate cost, to any one proposing to commence their manufacture.

Obituary.

Amid the sanguinary scenes which so often attend the birth of a new nation; where peaceful, happy homes are daily lost, and human life balances on the slenderest thread, the death of an individual is ordinarily but little felt or regarded. In the decease, however, of Dr. ROBERT SOUTHGATE, the profes-

sion, of which he was a brilliant member, has sustained a serious loss, and a large circle of admiring friends a severe affliction.

In his earlier years, Dr. Southgate was connected with the medical staff of the United States army, from which he resigned some time before the commencement of the war to engage in civil practice.

Having established himself at St. Augustine, Florida, he was there actively employed in professional pursuits, when Virginia, his native State, seceded. At once he abandoned home and interest, and tendered to her governor his services, which were immediately accepted. Passing from the State service shortly after to the Provisional Army of the Confederate States, he only ceased to serve them diligently and faithfully with his death, which occurred on the evening of the 23d instant.

Dr. Southgate was conspicuous, in and out of the army, not alone for his richly stored mind, and his rare and brilliant talents, but for a mild and gentle character, and a pure, spotless morality. In his demise, his afflicted family, his professional brethren, the army and the country have, indeed, sustained an irreparable loss. Peace to his ashes.

TRANSACTIONS OF ASSOCIATION OF ARMY AND NAVY SURGEONS.

Association of Army and Navy Surgeons, Feb. 13th, 1864.

Surgeon-General S. P. MOORE, President, in the chair.

The minutes of the last meeting were read and approved.

Letters were read from members of the Association in reply to the questions on tetanus: From Surgeon J. G. DUDLEY, giving the history of a case of tetanus of the mildest kind, in which the spasms were almost null, confined to the muscles of the jaws and neck, with only one severe spasmodic act, which lasted but a short while, then wore off, allowing the free administration of fluids and nourishment—yet the patient gradually sank on the tenth day after the seizure. This case occurred in the fifth week from the receipt of an injury in the great toe. This was the only case in his division of Winder Hospital out of 1,400 wounded under treatment since its organization. From Surgeon READ, seven cases of tetanus, with five deaths and two recoveries. An analysis of twenty-six cases from the statistical bureau, from Surgeon H. BAER.

The President called for the report of the committee on gun-shot wounds of the chest.

Surgeon THOM, chairman of the committee, read an interesting report, in which was considered: The general treatment of injuries of the lungs from missiles, penetrating and cutting weapons; the time and manner of death under such circumstances; the pathological condition, functional embarrassment, or usefulness remaining after these accidents; the mode of production and treatment of emphysema; and the provisions made by nature for accommodating foreign bodies retained within these organs, with the amount of disturbance which ensues. He regretted that few replies had been received to the interrogatories which the preparation of this report had suggested, and that he could furnish only seventy-four cases of gun-shot wounds of the lungs, in which twenty recovered, from which limited number it appeared the mortality was little over twenty-five per cent., or one-quarter. As far as could be ascertained, bleeding had been resorted to

in but one case, and that recovered. He mentioned a case of recovery stated by Surgeon W. G. SEMPLE, where a gig shaft passed entirely through the right lung of a man, reminding us of a case recorded by Mr. MADIN, of Stratford, England, in which the thorax was entirely transfixed by a gig-shaft that entered under the left arm and passed out beneath the right, perforating both lungs. The reporter had seen several cases in which balls were retained within the lungs with very trifling inconvenience, and cited in particular the case of J. W. BURKE, company "C," 6th Virginia regiment, wounded at Malvern Hill, July 1st, 1862. The musket ball entered half an inch above left nipple. The recovery was rapid. Transferred to ordnance works in this city; his general health remains excellent, though he is unable to bear active exercise without difficulty of breathing; cannot lie on left side, and suffers occasionally from pain in left side of chest and under scapula of the same side. This report was concluded by the history of a most remarkable case of gun-shot wound of lung and extraordinary recovery, communicated through letters received from Surgeons W. SELDEN and W. J. MOORE. Mr. R. D. Q., 22 years old, of scrofulous temperament, in January, 1840, was leaning on his gun, the muzzle in contact with his left side, when it exploded, tearing a hole in the chest of three or four inches in diameter, carrying with the load of shot fragments of the third, fourth and fifth ribs, and the whole of a very large, heavy English gold patent-lever watch, except the ring to which the chain was attached, which, singular to say, was found in the lining of his waistcoat, on the right side. Dr. SELDEN found the patient apparently about to expire, and, from the impending suffocation upon the ingress of air within so large an opening, he could make no exploration of the wound. Closing the wound with a large compress and bandage, opium and stimulants were freely administered. Re-action took place, and in a fortnight sufficient adhesions were established to permit exposure of the cavity of the wound and to recognize and remove the metal face of the watch from some six inches at the bottom of the wound. For several weeks fragments of the watch continued to present themselves and were extracted, some from upon the diaphragm, others below the clavicle. The lung collapsing, was not torn to pieces, though wounded in several points. Both the heart, covered by the pericardium, and the aorta, were exposed to view and to touch. Suppuration was enormous; hemorrhages frequent. The collapsed lung became bound down by adhesions. The whole side of the thorax sank. Sustained by every article of nutritious food calculated to supply an inordinate appetite, the patient's recovery was slow, until the wound, progressively reduced, could only admit a female catheter. The supervision of the *tentement metallique* during the progress of the case offered the enviable opportunity of viewing the cause of its production. Drs. Andrews and Higgins, (whose patient Mr. D. was,) were perfectly assured that the bursting of the bubble on the surface of the pus was the rationale of the sound. Fragments of watch and bone together, with shot and other extraneous matters, continued for some time to be ejected by expectoration with sputa. Mr. D. possesses, now, every part of the watch except the hands, a considerable portion of the *small works* having been expectorated. The openings into lung were of sufficient size to allow a current of air to escape, and if directed against the flame of a candle to extinguish it. Mr. D.'s health continues feeble, but is as robust as it had been during the past five years."

The PRESIDENT called for any voluntary communications from members present, saying that if there were none, the topic for discussion was still before the society.

Surgeon MICHEL said he hoped the Society would indulge him while he reverted to a subject which, he was more con-

vinced than ever, required consideration from the doubt that had been expressed, whether any real difference existed between tetanic spasms in a part and the disease termed tetanus. He would not allude again to the important bearing of this entire subject upon the record of cures, or even the determination of the number of cases of tetanus; but begged to examine the general proposition, *that every partial muscular contraction must, of necessity, depend upon reflex action.* Certain physiological principles were involved in this proposition, and their apprehension furnished, perhaps, grounds for the distinction he recognized between the symptoms of a hopeless disease, and those spasms or contractions of a benign character in muscles of a limb from traumatic or idiopathic causes. Muscular contractility was a property inherent to the tissue itself. Muscular fibre was potentially endowed with the power to contract independent of nerve force. Muscles in an amputated part were seen to contract, and this motility could not be referred to irritation of the nervous filaments within the muscular structures; for, after galvanism and electricity applied to these nerves had so exhausted the nervous force as no longer to elicit any response, the slightest irritation, mechanical or chemical, applied to the muscles themselves, at once developed contractions. Physiology, moreover, showed that muscular irritability was of longer duration than nervous irritability. Cadaveric rigidity, supervening sometime after death, was, he believed, another exhibition of muscular action without nervous agency, since it occurred even in paralysis, provided no atrophy or other nutritive change took place in the muscles. But the most remarkable example was the rhythmical movements of the heart, when this organ is removed from the body of a living animal. Its contractions and dilatations continue for a length of time without the possibility of invoking reflex spinal influence, as explanatory of their production. He would not raise the question of the existence of *ganglia*—those magazines of nervous force in the body of the heart—for the same pulsations are seen in the rudimentary heart of the embryo, when the heart is as yet but a blastema of cells, and before the development of any nervous apparatus. The nerves were the ordinary channels through which muscles were brought into play, but they constituted *only one* of the channels. The blood, itself, maintaining the vitality of the muscular tissue, and its inherent irritability, becomes at once *another* channel for the induction of muscular contraction, if freighted with any *noxious* principle adequate to its production. In these spasms, if the main blood-vessel be ligatured, the contracting ceases in the limb thus operated on. If, therefore, excitation could be conveyed by any other route than through the nerves of the part, muscular irritability once aroused would declare itself in local contractions of the organs thus stimulated. It was not impossible to conceive that such changes should occur in the wounded limb, amidst the wreck of all the tissues, as would introduce some morbid elements into the blood of the part calculated to awaken a certain degree of irritation in the muscular structures, whose partial contraction would be expressive of a local condition, not necessarily indicative of a nervous lesion sufficient to engender spinal irritation—not, therefore, a manifestation of reflex action. Dr. M. said he made these suggestions with the view to direct attention to the want of normal relation that might exist between the blood and the tissues through which this blood was circulating, and the results which possibly might follow; and to guard against calling nervous lesions always into requisition to account for the phenomenon of spasm. Were these spasms not sometimes seen to occur where no lesion of any kind existed? He would instance cramp in the calf of the leg, and hiccough. These were of idiopathic origin, indicating some perturbed condition of the individual muscles themselves. Every one had experienced a twitching or quiv-

ering of the orbicular muscle of the eye, at times most annoying, and from no appreciable cause; confined frequently to one portion only of that muscle, in either the upper or lower eye-lid. The cramps in leg during the parturient act were readily accounted for by pressure of the child's head upon the plexus of nerves, but in the other instances mentioned, we seemed conscious that the muscles themselves were irritated and discharging their motivity.

Surgeon CAMPBELL said that he would remark, in relation to Dr. MICHEL's suggestions, that while he had little doubt that the tendency to spasmodic action in a wounded limb is, in a great measure, favored by that increased muscular irritability consequent upon the hyperæmia and general exalted action of the part, and while he would be glad to know that careful investigations were in process, to determine the exact relations which this condition of the muscular fibre sustained to the phenomena observed, not only in traumatic spasms, but in tetanus itself, he would be unwilling, without the most thorough examination and discussion of the subject, to accept such a discrimination as the basis of classification for tetanus and traumatic spasms. It seemed to him more reasonable to conclude that, in the evocation of *all* spasmodic actions, whether tonic or clonic, the *same apparatus* was brought into requisition, viz: an excitor nerve, a spinal centre, and a motor nerve. The condition of the muscles acted on, through these agencies, might modify in any given case, to a certain degree, the *character* of the phenomena, but, in his opinion, the phenomena presented by convulsive actions of every kind are such, that we could not legitimately attribute them *solely* to enhanced muscular irritability. The subject of muscular irritability was one of great interest in its relations to gun-shot wounds, and he hoped his remarks would not be discouraging the discussion of it in connection with the subject under debate.

Surgeon LEWIS remarked that he had recently seen a patient who, after premonitory symptoms of general uneasiness and pain from gun-shot wound, was seized with spasmodic movements of the muscles of neck and side of face, extending down the arm. The muscles contracted intermittently in this way and then relaxed. The patient died. Was this tetanus or not? [The President inquired whether the patient had exhibited any trismus?] There was no permanent rigidity of the jaws, though their muscles were at times contracted.

Surgeon REID observed that, as to trismus, he had seen the disease begin in the wounded limb and progress to trismus, and the patient relieved by free incisions around the wound. Again, in a certain case of gun-shot wound of the hip, complete tetanus occurring, digital exploration invariably brought convulsions of the leg *only*. He believed in the importance of destroying the connection of the injured nerve with the centre.

Surgeon BOLTON thought it important not to allow similarity of symptoms to impose the belief that the case was one of true tetanus. He had treated a patient, whose foot was injured by a rusty nail, who had symptoms strikingly like tetanus with trismus, which, as the disease developed itself, proved to be a severe cold, accompanied with swelling of the cervical glands and coryza, with ulcers in the throat. At certain seasons of the year, we meet with cases of cholera of the severest character, assuming all the appearances of Asiatic cholera, yet no one supposes that the two diseases are identical.

Surgeon HANCOCK stated that, after the battle of Drainsville, no less than six cases of tetanus occurred among only seventy wounded. He was satisfied that atmospheric changes exerted on this occasion some striking influence upon the development of the disease, for the wounded had lain exposed upon the field under a very severe change within the twenty-four hours succeeding this engagement. That, perhaps, Dr.

WILLIAMS remembered the circumstances, as medical director at the time.

Surgeon WILLIAMS replied, that these cases, which he remembered well, were noted by him at the time, and sent on to the General Hospital; that he had not learned the result.

The hour for adjournment having arrived, the President dissolved the meeting.

CHRONICLE OF MEDICAL SCIENCE.

The Causes of Hysteria. By Professor BROWN-SEQUARD, and Professor JACKSH of Prague.

From notes of a course of lectures recently delivered by this eminent physiologist before the London Medical Society, on nervous diseases, we extract the following suggestive remarks on the causes of hysteria:

"Concerning the essential nature of hysteria, as well as of trembling palsy, Dr. Brown-Sequard confessed that he knows nothing. Some symptoms, however, may be explained—the absence of the sense of touch, for instance: if a cupping glass be applied to a part of the insensible skin, so as to redden it by drawing blood into it, the anæsthesia immediately ceases; in like manner, if an attempt to draw blood by cupping or by leeches be successful, there will be no longer anæsthesia of the part acted upon. These facts prove that the anæsthesia is not due to a centric cause, but wholly to the want of circulation at the periphery. Referring to the morbid volition, Dr. Brown-Sequard mentioned a case of a young lady (one of his private patients) whose right arm had been completely paralyzed for six years. She had evinced other symptoms of hysteria, and her mother was also liable to this malady. He requested his patient to hold her arms to her sides, and, while doing so, to bend the body forwards. The body having been thus inclined, the right arm remained close to it. Of course, had the paralysis been due to a structural cause, the arm, instead of being retained in its position, would have fallen forwards. Another similar case was that of a girl having a violently shaking hand. Dr. Brown-Sequard stood before her, and said: "I am sure I shall soon be struck by her;" and very soon a movement beyond the ordinary shake occurred, by which he was struck, thus proving the power of the will over the limb. He also described a very singular case of persistent shaking, affecting each part of the body in succession: if, for instance, the arm actually shaking were forcibly held still, the other arm would immediately begin to shake; if the two arms were held, a leg would carry on the movement; if that also were secured, the other would begin; that being also held, the head was violently agitated. If the four limbs and head were all restrained, then the body itself was powerfully shaken. Another curious manifestation of hysteria was spoken of, consisting of swinging the arm round four or five times, then striking the chest with it, the two motions being continued alternately. The affection began immediately after the subject of it had received bad news, and ended as suddenly. The lecturer insisted strongly, that hysteria is a very real, and often a very serious disease. He expressed the opinion that, out of ten hysterical cases, eight would never completely recover, and that even the remaining two would, on some rare occasions, exhibit remnants of the malady. Sometimes muscular atrophy, together with complete and permanent stiffness of joints, follows, and results from hysterical attacks. Calling the attention of his audience to a case of hysterical hypochondriasis, with slight aphonia, the lecturer observed that the malady in this instance was due to poverty of the blood, which, as Dr. Todd has already insisted, is a very frequent cause of hysteria. The appetite of hysterical patients, occupying a good social position, often fails, and thus induces the malady where the tendency to it exists. The more we know of nervous complaints, the more con-

vinced we become of their intimate relation to each other. When transmitted from one generation to another, it frequently happens that they are not transmitted directly, but, as Morell and Pritchard have asserted, a parent having one nervous disease will transmit another to his child, while the several children of one parent will often severally exhibit a distinct form of nervous disease. Not unfrequently one person will present a blending of several forms, as evidenced by a girl whom the lecturer introduced to his audience. When eleven years of age she had scarlet fever, resulting in albuminuria and dropsy. There was extensive ulceration of the neck, and this was followed by a deviation of the spine. There is now a forward and a slight lateral curvature. She was subsequently attacked with what was called rheumatic gout, and at present has great pain in the right arm, but no swelling. In July, 1861, she had hysterical fits, which reappeared some months afterwards, and finally emerged into genuine epilepsy. She has also a slight choreic movement of the arm and hand. The movement is not tremulous, and the will seems to have some share in it. The eyes protrude a little; both pupils are large; and, owing to an irritation of the sympathetic nerve, one is larger than the other. Another case exhibiting a like blending of nervous diseases, was also shown: a man, aged 33, who had convulsions when three or four months old, preceded by hemorrhage from the bowels, afterwards became paralyzed on the left side, where the convulsive movements had been most powerful. Epilepsy supervened, and was followed by jerkings and twitchings of the limbs, and a peculiar contorting spasmodic movement, which still continues, of the arm and hand. The arm has been more affected from the first than the leg, and is considerably shorter than that of the other side. The hand and fingers may be extended if the force be applied gently; but on its withdrawal the original position is immediately resumed. The treatment in this case simply consists in the application of circular blisters to the arm, in the hope of producing a modification of nutrition in the nervous centre. This lecture was closed by some remarks upon infantile paralysis; but as they were resumed in the following one, we reserve them until our next report.

That the pathology of hysteria, as suggested by Brown-Sequard, may be attributable to disturbances of the functions of the peripheral nerves, we append an extract from a paper on this subject, read before the Congress of German naturalists and physicians, at Carlsbad, December, 1862, by Professor Jacksh, of Prague, in which he adverted principally to anodynia and cutaneous anæsthesia. In the former affection the nerves had lost the power of transferring the perception of pain to the encephalon, so that the prick of a pin blisters, and Faradisation, by means of wire-brushes, remained unperceived; while in the latter the sense of temperature, pressure, and locality were wanting. There were different degrees of both affections; the anæsthesia was either complete or incomplete. With regard to its extent, there was the greatest variety. Anodynia frequently occupied only one half of the body, but it sometimes extended beyond the median line; in other cases it was confined to a very small circumference. Anodynia of the tongue was often associated with that of the skin. The sensibility of the muscles was only seldom increased, but generally diminished or entirely gone. This affection might be likewise either partial or general, and did not follow certain courses of nerves; as, for instance, the trapezius might be affected, while the sterno-cleido-mastoid remained in its normal condition. The electro-muscular contractility and the voluntary movements were, generally, not impaired; sometimes, however, he had seen them deficient, especially in the lower extremities. The mucous membranes might be affected in a similar manner; there might be loss of smell and taste, anodynia of the Schneiderian membrane, of the mucous membrane of the aerial passages, the vagina, and the rectum, anæsthesia of the retina, etc. The duration of the affection varied from several days to several years. It generally ensued after emotion, and sometimes disappeared after cold

aspirations. Amongst the diseases most frequently associated with anodynia, Professor Jacksh had observed chorea, epilepsy, catalepsy, somnambulism, melancholia, paralysis, and contractions, fits of laughing, vomiting, neuralgia, dysphagia, Brodie's tumor of the subcutaneous cellular tissue, and paroxysms of apparent ague. The affection was more frequent in females than in males, more in Jews than in Christians, and was chiefly observed in persons between twelve and thirty years of age. The prognosis was not very favorable, as relapses were frequent. The medicines chiefly to be employed were zinc, quinine, secale cornuta, morphia. Cold aspirations, the douche, etc., were also serviceable; but by far the best remedy was Faradisation, especially if paralysis, contractions, and neuralgia were at the same time present.—*Medical Times and Gazette*.

Remarks on the Recently Proposed American Plan of Treating Gun-Shot Wounds of the Chest by "Hermetically Sealing." By Deputy Inspector-General T. LONGMORE, Professor of Military Surgery, Army Medical School.

A plan of treating chest wounds has been lately brought to notice in the "American Medical Times," by Dr. B. Howard, of the United States Army, which is called by its author the "treatment by hermetically sealing;" and the editor states it to be understood that at the next engagement of the Army of the Potomac an hospital is to be organized, under charge of Dr. Howard, for the sole purpose of treating gun-shot wounds of the chest by the sealing process. Dr. Howard advocates the propriety of this treatment for all penetrating wounds of the chest by gun-shot. He also describes it to be applicable to penetrating wounds of the abdomen, whether made by gun-shot or stabbing instruments.

The following is a description, in Dr. Howard's own words, of the manner in which the operation of hermetically sealing is to be practised:

"All accessible foreign bodies having been removed, introduce the point of a sharp-pointed bistoury perpendicularly to the surface just beyond the contused portion, and, with a sawing motion, pare the entire circumference of the wound, converting it into a simple incised wound of an elliptical form. Dissect away all the injured parts down to the ribs, then bring the edges of the wound together with silver sutures, deeply inserted, at not more than a quarter of an inch apart; secure them by twisting the ends, which are then cut off short and turned down out of the way. Carefully dry the surface, and with a camel's-hair pencil apply a free coating of collodion over the wound; let it dry, and repeat it at discretion.

For greater security, shreds of charpie may now be arranged cross-wise over the wound, after the manner of warp and woof; saturate it with collodion, and when dry repeat the process, until the wound is securely cemented over. As a still greater protection, a dossil of lint may then be placed over the part and retained with adhesive straps.

If there be a tendency to undue heat in the part, it may be kept down with cold affusion; should any loosening of the dressing occur, an additional coating of collodion may be applied. The sutures must not be removed until healing by first intention is complete.

Should suppuration occur, so as to occasion distressing dyspnoea, proceed to treat it in all respects as a case of empyema, introducing the trocar at the most dependent point, and taking special care to avoid the admission of air."

Dr. Howard describes particularly three advantages which are gained by this perfect closure of the wound. 1st. Hemorrhage is controlled. At the worst, he says, the amount of blood lost after the operation cannot be more than would suffice to fill up the unoccupied space remaining in the pleural cavity; the elastic clot resulting furnishing a styptic *par excellence* for the wounded vessels of the yielding lung. 2d. Dyspnoea is immediately relieved upon removal

of the atmospheric pressure. 3d. Suppuration, if not prevented, is greatly diminished by shutting out the constantly renewed currents of atmospheric air, and its character is very favorably modified. "Indeed, if the wound were closed soon enough," says Dr. Howard, "I deem it possible that the slough of the track through the lung, with the limited amount of attendant pus, might be entirely disposed of by absorption and expectoration."

As a proof of the successful results of the sealing plan of treatment, Dr. Howard mentions that some cases upon which he operated were six days in the ambulances before reaching a general hospital, part of the road traveled over being of the worst description: on the fifth day all but one of these so treated were able to walk comfortably.—*London Lancet*, March, 1864.

[Professor Longmore's remarks on this subject will appear in our next number.]

Southern Surgeons Abroad.

Doctor Marion Sims is now practising in Paris, and as the improvements which he has introduced into what may be called the surgery of females have revolutionized that department of the art all over the world, and his procedures have formed the basis of a new and happy era in the treatment of the series of fistulae and other diseases of women which were previously incurable, it will be interesting to give some particulars of what he has been doing here surgically since, like many other Americans, he has sought a home in Europe.

Dr. Sims had already achieved a great reputation in America and England by his introduction of silver wire suture—certainly one of the most important surgical improvements of the century; and by his immediate application of this discovery to the cure of all kinds of fistulae and clefts in the mucous canals. The success with which he operates on deformities and deficiencies of this kind was not, however, at first fully appreciated at Paris; and when he came over, he was asked to operate on some of the most difficult cases of prolapse of the bladder from sloughing of the tissues, and utero-vesical and vaginal fistulae, which were known to exist in this capital. He had a triumphant success in these cases, which had been abandoned as hopeless, but which he cured with a single operation; and his reputation soon extended so greatly that he was summoned to the highest and most important personages, and the Emperor has given him a special permission to practice in Paris. It is no breach of confidence, since the fact has already appeared in print, to mention that Dr. Sims has been consulted by the Empress, whose general health is good, but who is known to be delicate.—*Paris Letter—Lancet*, March, 1864.

Recto-Vesical Lithotomy.

The application of this to the parallel method of recto-vesical lithotomy in the male, is a subject worthy of careful consideration. Recto-vesical lithotomy in the adult is a proceeding which was used long before the introduction of metallic sutures, and was followed with modifications by Mr. Lloyd, of St. Bartholomew's. Without these sutures it was liable to a serious objection—the occasional persistence of recto-vesical fistula. The silver-wire sutures, however, promise to obviate this inconvenience. Dr. Sims has mentioned to me a case in which Dr. Bauer, of New York, operated by this plan in 1859, Dr. Sims putting in the sutures. He says: "The patient was placed on the left side, and my speculum was introduced into the rectum, exposing the anterior wall of the rectum, just as it would the vagina in the female. A sound was passed into the bladder. The Doctor entered the blade of a bistoury in the triangular space bounded by the prostrate, the vestibulae

seminales, and the peritoneal reduplication. He passed the finger through this opening, felt the stone, and removed it with the forceps without the least trouble. The operation was done as quickly and as easily as it would have been in a female through the vaginal septum. After the removal of the stone, Dr. Bauer kindly asked me to close the wound with silver sutures, which I did, introducing some five or six wires with the same facility as in the vagina. There was no leakage of urine. The patient recovered without the least trouble of any sort. The wires were removed on the eighth day, and on the ninth day the patient rode in a carriage with Dr. Bauer a distance of four or five miles, to call on and report himself to our distinguished countryman, Dr. Mott. The facility and safety of executing recto-vesical lithotomy (except in children for anatomical reasons,) and the success of closing at once the cut by the introduction of metallic sutures, ought to make this the operation in the male."—*Paris Letter—Lancet, March, 1864.*

The Army Surgeon. By General Baron AMBERT.

"There is not here below a more noble task. Those who fulfil it often purchase at the expense of their lives the modest glory which a world greedy of dazzling triumphs ignores. One might say of the military surgeon in the field what General Foy said of the captains of infantry: 'Strangers to the gratification of applause which the general officer enjoys, exempt from the passionate intoxication of the soldier, these martyrs to duty consume themselves in resignation.' Napoleon I. fully comprehended the importance of military surgery. He honored with an unlimited confidence the man in whom that profession was personified, the wise and devoted Larrey; he decreed to him a title of nobility. But beyond all this, on the rock of Saint Helena, he placed the name of Larrey in his last testament, with these words, which outvalue all titles, and surpass all eulogiums: 'C'est l'homme le plus vertueux que j'aie connu.'"

Baron Larrey.

It must be a source of pride to the profession of military surgery in France, that it has been so honored in the person of one of its chiefs. Public statues and public honors have been freely accorded to him. "The name of Larrey is inscribed on the Arc de Triomphe amidst the names of the captains who, under the Republic, saved France; who, under the Empire, made it so great and powerful. Napoleon was inclined to do still more for his surgeon-in-chief when he said, 'What a man, what a brave and worthy man, is Larrey! What care was given by him to the army in Egypt, in the passage of the desert, after Saint Jean de Acre, and in Europe! I conceived for him an esteem which was never shaken for an instant. If ever the army should raise a column to Gratitude, it ought to erect it to Larrey.'"

What a strange series of events have now led the son of the Larrey whose memoirs we have been glancing at, to be to the second Empire what his father was to the first! A Baron Larrey is still the personal and confidential surgeon of the Emperor Napoleon, his surgeon-in-chief in the fields of an Italian campaign; and as a member of the Council of Health of Armies in the Ministry of War, and as President of the Imperial Academy of Medicine, still does honor to the name by placing it amongst the most conspicuous in the roll of military surgeons in France.—*London Lancet, March, 1861.*

M. VELPEAU AT THE ACADEMY OF SCIENCES OF PARIS.—This eminent surgeon has just vacated the president's chair of this academy, and it redounds in no small degree to the honor of the profession

that such an eminent post has been held and so worthily occupied by M. Velpeau. It reminds us of Sir B. Brodie presiding at the Royal Society. Our readers are aware that the academy consists of numerous sections, the members of which are eminent in the different branches of science. Among these branches there is of course one for medicine and surgery, and the attainment of a membership in this section is the highest point towards which the imagination of French physicians and surgeons is wont to soar. M. Velpeau delivered, before leaving the chair, a most appropriate and touching speech, in which he especially dwelt on the fact of having started from the humble ranks of life, and having at last obtained the envied honor of presiding, for one year, over the Academy of Sciences of Paris.—*London Lancet, March, 1864.*

Ovariectomy.

Thanks in no small measure to the indefatigable and restless opposition of Dr. Robert Lee, ovariectomy, which had for some time been one of the most successful and important of great operations has also become the most illustrious and renowned. Opposition is the touchstone of truth; and the repeated onslaughts of Dr. Robert Lee have in each case brought down statistics so full and triumphant from Tyler Smith, Baker Brown, Clay, Wells, and others, that the case in favor of the operation has long since been thoroughly established. Here is a disease hopeless, fatal, and remorseless—held till lately to be incurable and deadly: on the other hand, an operation which Mr. Baker Brown has performed fifty-three times during the last twelve years with twenty-nine recoveries, the improvements in the operation being so great that of the last thirty-one operations, there have been only ten deaths. Dr. Tyler Smith has performed it recently in fifteen cases, of which twelve have recovered. Mr. Spencer Wells has operated in fifty-five cases, with thirty-seven recoveries; and of his last twenty cases, eighteen recovered. It is astonishing that any voice should be raised to carp at an operation which has been practised with results so triumphant.—*Lancet, 1863*

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CONFEDERATE STATES



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No. 5.

ORIGINAL COMMUNICATIONS.

ART. 1.—*On the Microscopic Anatomy, Physiology and Pathology of the Human Liver.* By H. D. SCHMIDT, Surgeon P. A. C. S. (Concluded.)

Having now obtained a correct idea of the intricate arrangement of the anatomical elements, that compose the human liver, we are better enabled to build a sound pathology upon it. In regard to the *organic* diseases to which this organ is subject, I have little to say. Want of time and suitable opportunity have prevented me from investigating them as thoroughly as I am in the habit of doing. Nevertheless, it shall not interfere with the statement of the views I have formed from the observations I have made. The consideration of the malignant diseases, however, as carcinoma, &c., I have to defer to some other time, for the subject is too extensive to be treated in this place. It will be ample material for a monograph. Therefore, my remarks will be confined to the liver in a state called cirrhosis, and to that of fatty degeneration. In regard to the former I have had several opportunities to make hasty examinations of specimens in that condition, and had even commenced, several years ago, to make preparations for a thorough investigation of this interesting

subject. But circumstances interfered with my intentions, and there the matter rested. However, from what I have seen and read on the subject, I am inclined to think that *cirrhosis* consists in an hypertrophy of the capsule of the "portal vessels," perhaps also that of the "hepatic veins." These capsules, in becoming hypertrophied, and extending over all the vessels of the organ, of course would encroach upon the parenchyma, or proper secreting substance, and the latter necessarily become atrophied. But, independent of this mechanical pressure exerted upon the parenchyma, the blood vessels being also compressed, and having their calibre reduced, are unable to further supply the organ with an amount of blood sufficient for its nourishment and secretion. Thus, while the fibrous tissue of the capsule becomes more developed and more dense, the blood-vessels and parenchyma become more compressed, and consequently diminished in size and quantity. The organ not being able any longer to remove those principles, of which the bile is composed, from the blood, the secretion becomes diminished, elements that ought to be eliminated from the blood become obnoxious to the system by remaining there, and as the disease progresses it at last ends in death. *Frerichs*, in his work on diseases of the liver, speaks of the presence of spindle-formed, and, if I remember rightly, also stellated cells in cirrhotic livers. I have looked

for these cells, while examining some specimens, but could not find them. In tearing up a small portion of parenchyma, however, there are often found fragments of the meshes of capillaries, which have the appearance of spindle-formed or stellated cells, and might easily be mistaken for them. When the liver becomes cirrhotic, it very frequently becomes diminished in size and harder, according to the stage of the disease. Nevertheless, I have seen specimens, which had rather increased in size, although the substance was harder, and large portions of the surface of the organ presented that peculiarly knotted appearance, commonly called "hob-nail liver."

The condition of the liver when undergoing *fatty degeneration*, I have more closely examined than that of cirrhosis, though, for the want of time, not as thoroughly as I would desire. When a portion of the parenchyma is examined in this state, the hepatic cells will be found to contain fat globules, varying in number and size; frequently some of the latter run together and form very large ones, so that, in some cases, they almost fill up the whole cell. Numerous fat globules are also found free, *i. e.*, between the cells, these most likely were at first formed and contained within the cells, but were discharged by the bursting of the latter during the process of secretion, and refused to be absorbed by the biliary tubules or by the lymphatics. In several instances, I have carefully dissected, under low magnifying powers, some of the finer hepatic ducts, and found that even their epithelium had undergone a fatty degeneration. Fat globules are sometimes observed within hepatic cells of normal human livers, but the number of these instances is not sufficient to warrant the idea that the fat is a natural secretion, and I therefore regard it as a deviation from health.

The human liver, in a state of fatty degeneration, is often called the "Drunkard's Liver." It is true, that persons who are in the habit of drinking freely of strong alcoholic liquors, often become the subjects of this disease; but the disease is also found in persons of opposite habits. One of the finest specimens of "fatty liver" I ever met with, I found by making a *post-mortem* examination of a child (between three and four years old) that died with Bright's disease, or fatty degeneration of the kidneys. The latter disease I had diagnosticated by the examination of the urine, but the former I never suspected. The cause of fatty degeneration of the liver is not the same in all cases. With the drunkard it is said that the disease is caused by an excess of carbon, taken into the system in the form of alcohol. The lungs being unable to eliminate all the carbon, the liver is called upon to assist. But as the vital forces with which it is endowed suffice only for the secretion of a certain quantity of bile, without destroying the integrity of the organ, much of the carbon remains unconsumed. For the want of vitality now to transform this carbon along with other elements into bile, it is left to combine with hydrogen to form an organic principle of a lower order, namely, fat. Another explanation might be as follows: the lungs not being able to eliminate the excess of carbon, the liver readily responds to the call to assist in the task. But in doing so, it is obliged to draw very largely for an additional amount of

nerve force from the nerve centres by which it is supplied. The latter, by the constant drain, and not being able to generate more than a certain amount, at last become depressed and exhausted, and in this condition cannot even furnish the quantity essential to the process of a normal secretion. Now, for the want of the necessary nerve stimulus, the secretion becomes abnormal, as in any other organ. As long as the small amount of nerve force, by which the liver is still supplied lasts, bile is formed; but as soon as the vitality is exhausted, the elements, contained in a state of excess in the plasma, combine to form fat, an organic principle of a lower order.— This explanation may also be applied to those cases not originating in the introduction of alcohol into the system. In these instances, however, the nervous system becomes exhausted by some previous disease, reducing the tone of the system in general, and also decreasing the normal amount of vitality inherent to the blood. The latter, being deficient in vitality, is unable to furnish a healthy plasma from which all secretions are derived, and the result is that some of the productions are organic principles of a lower order, like fat. Fatty degeneration in any organ may always be traced back to a state of inaction or depression, either of the organ concerned or of the system in general.

The liver is also often the seat of parasitic animals, especially hydatids. During my researches into its microscopic anatomy, I injected and examined the livers of many animals, and to procure those of the sheep, hog, &c., uninjured, for that purpose, I usually removed them from the animals myself at the slaughter-house. While thus engaged, I found, to my astonishment, that a very considerable number of livers of the hog were infested with hydatids; sometimes of great size, as large, perhaps, as the fist. On inquiring into the cause, the butchers told me that the hogs, whose livers were thus diseased, had been fattened mainly on corn.

The *functional* diseases of the liver are those in which no additional products are formed, and no change of structure, either in quality or quantity, takes place within it. But the most of them are accompanied by a singular phenomenon, called *icterus* or *jaundice*; and it is to the explanation of this that I wish to direct the attention of the medical profession. It is hardly necessary, in this place, to dwell long on the theories that have heretofore existed, and still exist, in explanation of jaundice. They can be found in most treatises on the practice of medicine. The one I was formerly taught was that the liver, being in a torpid condition, failed to abstract from the blood the constituents of which the bile is composed. The coloring matters of the latter would thus accumulate in the blood, and produce the yellow appearance of the skin, by which they at last, if the torpidity of the liver persisted, would be excreted; if the skin could not remove them all, the kidneys would come to the rescue. But before proceeding to the true explanation of the phenomenon, I will first present a fact which has been noted by many observers. This is, that in organic diseases of the liver, where the secreting powers of the liver are evidently diminished by an encroachment on, and a consequent diminution of its parenchyma, jaundice

is a very rare occurrence; but that, on the contrary, when jaundice is followed by death, the parenchyma is found to be unaltered, but the hepatic ducts are very generally in a diseased condition. *Lehmann*, in his excellent treatise on organic chemistry, directs our attention to these facts, while treating on the subject of bile. I will accept, then, the fact, that in jaundice the hepatic ducts are very generally diseased, and use it as a foundation for my arguments in the explanation of that phenomenon. In the meantime, however, I must refer to the microscopic anatomy of the liver, as I have described it in these pages, and especially to one of the triple communications that exists between the lymphatics and the hepatic ducts. It will be remembered that the finest branches of the lymphatics take their origin in the same capillary network of "biliary tubules," in which the finest hepatic ducts commence. Supposing now, that, by some cause or other, the mucous membrane of the hepatic ducts becomes inflamed, and in consequence of this inflammation swells and becomes thickened; of course, by the thickening of the mucous membrane, the calibre of this duct or tube must evidently become diminished, or even obliterated. But, in the meantime, the parenchyma or secreting structure of the liver, is in a perfectly normal condition, and the secretion is going on as usual. Now, I ask, what must be the natural consequence of this condition of things? In casting a glance at the diagrams, the answer is ready. The circulation of the blood is going on without interruption; the constituents of which the bile is to be composed are carried to the parenchyma as usual, and within the hepatic cells they are elaborated into bile. When the process of secretion is completed within the cells, they burst, and discharge their secretion into the space they occupied before bursting. The secretion is absorbed by the net-work of "biliary tubules," and thence enters into the hepatic ducts. It is now that arises the difficulty, when the secretion has arrived at the place of partial, or even entire obstruction, caused by the thickening of the mucous membrane of the hepatic ducts. And what is the result of this obstruction? Why, the secretion going on as usual, and being unable to find its natural outlet through the hepatic duct into the duodenum, must evidently accumulate behind the obstruction, or seek another outlet. At first, the smaller hepatic ducts become overfilled, and next the net-work of "biliary tubules." But as the secretion is still going on, and the obstruction is not removed, the bile seeks another outlet, which it soon finds in the lymphatics that arise from the net-work of "biliary tubules."—Hence, it is an easy matter to perceive what is to follow. The obstruction in the hepatic duct still existing, the bile now accumulates in the finer lymphatics, from these it gets into the larger lymphatic vessels, and at last arrives in the thoracic duct. The latter, in its turn, discharges it into the left subclavian vein, and thus finally it arrives in the cavity of the heart. Here it becomes thoroughly mixed with the blood, and then enters the general circulation. The presence of bile in the blood is first detected in the sclerotic coat of the eye, the whiteness of this coat, and the transparency of the conjuction, affording a greater contrast to the yellowness of the

bile than the skin. But the bile, as a finished secretion, and especially its coloring matters, being excrementitious, is now a foreign substance to the blood; and as it might become injurious to the whole system, it must be eliminated. I do not pretend to say that the liquid portion of the bile is necessarily injurious or fatal to the system; it may be only the coloring matters; for the former, as already mentioned, is re-absorbed in the small intestines. The skin at first performs the vicarious function of the elimination of the bile or its coloring matters through its numerous perspiratory glands; and in such cases, both the skin and perspiration are intensely yellow, the latter often staining a white handkerchief when wiped off. If the action of the skin is insufficient for the elimination, the kidneys assist, and the bile can be detected in the urine by chemical tests. Besides the glands of the skin and kidneys, other gland and secreting membranes may participate in the elimination, particularly the salivary glands and the mucous membrane of the mouth, as evinced frequently by the presence of a bitter taste in cases in which the functions of the liver are deranged. The mucous membranes of the air-passages may even assume a vicarious function of the liver, as illustrated by a case related to me by my friend, Surgeon D. W. Brickell.* However, in many cases of jaundice, notwithstanding the elimination of bile by the perspiratory glands of the skin, yellowness of the skin persists for a considerable time, although the liver has resumed its normal functions, and the patient entirely recovered from the functional derangement of this organ. In these instances, the yellow appearance of the skin is due to the presence of bile within the cells of the epidermis, thrown out from the capillaries of the skin along with the plasma, from which those cells were formed. The jaundice, of course, will gradually disappear as the epidermical cells are thrown off and replaced by others formed from a plasma containing no bile.

In the preceding lines, I have merely given a sketch of the rationale of jaundice in general. Various circumstances, of course, will modify or arrest the phenomenon in its course.—These I shall now consider:

In some cases, the obstruction, arresting the flow of bile, and caused by a swelling of the mucous membrane, lining the bile duct, may exist to such an extent as to only diminish

* The following is Dr. Brickell's own statement: In November, 1862, I was called to attend Mr. H., at the Confederate House, Jackson, Mississippi. He was under the care of my friend, Dr. S. Choppin, who was obliged to leave for Charleston. Mr. H. had arrived several days before from Richmond. He had long been afflicted with diarrhoea, and on his arrival from Richmond, was thoroughly jaundiced. I was called to treat him for a severe attack of pneumonia. When I first saw him, he was expectorating mucus of a decidedly yellow tinge; this tinge became rapidly more intense, and in a day or two the handkerchiefs into which he expectorated would become thoroughly saturated, and dyed as yellow as saffron. This feature was so striking as to attract the attention of all who entered the room. The coloring matter was evidently coughed up from the lungs, as I have frequently seen the patient in the act of expectoration. —D. W. B.

the calibre of this canal without obliterating it. In such a case, a certain amount of bile would still arrive in the duodenum, and the functions of the intestines not be materially deranged. Nevertheless, the obstruction may be sufficient to cause a regurgitation of bile, and the entrance of the latter into the lymphatics and the blood; a yellowness of the eyes will then be observed, and the skin also may assume a yellow tinge; but as soon as the obstruction is removed, the latter disappears. Therefore, the intensity of the jaundice, and the time of its duration, depend on the extent of the degree and duration of the obstruction. In other cases, only the hepatic ducts of a portion of the liver may be affected, while the rest, and also the large hepatic duct, remain untouched by disease, and consequently open to afford an outlet to the bile secreted in the healthy portion of the organ. Now, if the affection is only partial and transient, the system at large may not be materially disturbed; but when the obstruction exists in the common hepatic duct, and extends so as to obliterate its calibre, the consequences will be of a more serious nature. In warm climates, in the spring of the year, the weather sometimes becomes suddenly very hot and oppressive. The atmosphere, becoming more heated, expands, and is rarified, in consequence of which the supply of oxygen, essential to the lungs to perform their function in the elimination of carbon from the system, is diminished. The carbon, accumulating within the blood, seeks another outlet, which it finds through the liver; but the latter, in order to eliminate this carbon, must increase the amount of its secretion; and as, in a normal condition of things, only a certain amount of bile can pass through the hepatic ducts to enter the duodenum, the surplus must accumulate behind, and, as already explained, enter the lymphatics, the result of which will be the phenomenon of jaundice. A number of such cases have come under my observation and treatment in New Orleans in the spring of 1861, especially in the month of May. In these cases, an abnormal amount of bile secreted, is poured into the duodenum, and, in many instances, enters the stomach, producing great distress and obstinate vomiting of bile. When this occurs, it is very remarkable, how the presence of an excessive amount of bile in the duodenum should reverse the peristaltic action of the muscular fibres of this part of the intestines, directing the flow of this secretion towards the stomach; and that also the circular muscular fibres, surrounding the pyloric orifice of the latter, should relax to allow it to enter into its cavity by passing the pyloric valve. Such cases are usually accompanied by obstinate constipation, often very difficult to remove. However, in other instances, the reversion of the peristaltic action of the muscular fibres does not take place, and the bile is allowed to take its natural course through the intestinal canal; but being present in an abnormal quantity, it over-stimulates the muscular fibres, and also irritates the mucous membrane. The irritation of the latter produces at first diarrhoea, but, if persistent, may terminate in inflammation, aggravate the diarrhoea, and even extend through the canal, and result in dysentery.

I have seen many cases of jaundice, and especially among

our soldiers, accompanied by a very slight, if any, disturbance of the system in general. The patient feels almost as well as ever, and the functions of the system are apparently little or not deranged, though in many cases the yellowness of the eye and skin persist for a considerable time. This variety of jaundice has been designated "Camp Jaundice" by many surgeons of the army. Though the pathology of it is undoubtedly the same in all cases, *i. e.*, a congestion or a slight inflammation of the mucous membrane of the common hepatic duct or some of its branches, the affection may be created by different causes. One of the latter may be the influence of cold, producing the condition of said membrane just mentioned, similar to that of the Schneiderian membrane in the affection called "coryza." This membrane, which lines the cavity of the nose, is very susceptible to an impression of cold, made either directly upon it, or upon the general surface, and reflected to it. My own person has furnished me a favorable subject of observation. Being very susceptible to the influence of cold, I have often observed that when sitting quietly in a cold room engaged in reading or writing, or when being exposed for a short time to a direct current of air, I suddenly commence to sneeze, and before long, if the impression of cold has been continued long enough, the passages of my nose will be almost closed by the congestion of the lining mucous membrane, so that I have to breathe mainly through the mouth. Avoiding the cause, however, the membrane soon recovers its integrity, (sometimes in one night,) and the affection disappears. Now, the same may take place in the mucous membrane lining the hepatic duct and its branches. The soldier, having been on the march during the day, throws himself upon the cold and damp ground, when arriving in his camp at night. The mucous membrane of the bile ducts becomes congested, the calibre of the canal is diminished, and jaundice appears, accompanied by no other symptoms of disease. If the cause is avoided, the congestion of the membrane will depart, the bile in the blood will be eliminated by the skin, and the jaundice disappears. Another cause may be of a miasmatic nature. The miasma, reaching the blood through the medium of the lungs, circulates through the body. When arrived at the nerve centres, it makes its first impression. The extent of the impression depends on the intensity of the cause; if the latter exists in a slight degree, it may only embrace the centres which supply one or the other organ with nerve force. In the case under discussion, the nerve centres, supplying the lining membrane of the bile ducts, become affected, and they fail in generating the amount of nerve force, essential to the preservation of the tone of the membrane; the arterioles, venules and capillaries of the latter become relaxed, and a congestion ensues. A most remarkable case, in which jaundice suddenly appeared by a strong mental emotion, was not long since related to me by a medical gentleman. It corroborates my explanation of the production of this phenomenon by an affection of the nerve centres. In the same manner, jaundice is produced, when accompanying intermittent and bilious remittent fever, modified, of course, by circumstances. The two latter diseases, together with

"pernicious or congestive fever," being produced by the same cause, I regard as one disease, differing only in degree. Their pathology is, as I have already pointed out, namely, the miasma leaves its first impression on the nerve centres; through the latter the respective organs they supply become affected. The nervous phenomena, presented to us in these diseases, are so manifold and interesting that I cannot properly discuss them in this place; they will at some other time afford me ample material for a special treatise. The many cases that came under my observation and treatment in the year 1861 at New Orleans, both in the wards that I held in the Charity Hospital and in my private practice, afforded me a fine opportunity for making a special study of the pathology and treatment of these diseases. Having taken notes of the most interesting cases for illustration, and also made some microscopic observations, regarding the nature of miasma, I commenced to write an extensive treatise on the subject; the manuscript, however, as far as it went, I left behind me at New Orleans when entering the army. Nevertheless, as soon as practicable, I shall make it the subject of a monograph.

When the nerve stimulus, essential to any secreting organ, to perform regularly its normal functions, becomes perverted, the productions also become perverted or abnormal; and this is frequently the case in the liver, when the bile becomes altered in its composition. While engaged in my researches into the microscopic anatomy of the human liver, I, of course, had ample opportunity to examine the bile found in the gall-bladders of the numerous specimens I used. Though these specimens, as far as they themselves were concerned, were healthy in their structure, yet they were livers of subjects that had come to death by various causes. Some were taken from men who were hurled out of life by some violent accident, others again from patients who died from the effects of an acute or chronic disease of some other organ. In these specimens, then, I found that the bile, taken from the different gall-bladders, differed very much in color and density. The shades of color ranged from the bright yellow through the brown and green, up to the black; and the density from that of milk to that of a viscid fluid, like tar. In one specimen, taken from a woman who died of typhoid fever, I especially recollect that the bile, contained in the gall-bladder, was as black and viscid as tar; in others, especially that taken from a young man who died of chronic bronchitis, accompanied by disease of the kidneys, it was as bright as gold. In many diseases of other organs, the functions of the liver become disturbed in various degrees, and, as a natural consequence, the secretion must deviate from the normal standard. But, independent of other organs, and even in apparent health, the liver is very liable to have its functions slightly deranged, when the bile will become altered in its composition.

During the spring and summer seasons of warm climates, by the long continued heat of the weather, the system frequently becomes depressed; and the blood-vessels, having lost their healthy tone, are relaxed, in consequence of which the circulation of the blood is carried on in a sluggish and languid manner. Usually the first effect of this relaxation is

felt in the liver. This organ, notwithstanding its participation with the other organs in the general relaxation of the system, and with scarcely sufficient ability to perform properly its own functions, is called on to assist the lungs in the elimination of carbon. In some cases it may succeed in performing the additional function, but in others, a congestion of its blood-vessels is the result. When the blood-vessels of the liver become congested, and the congestion is not removed, it must at last extend to the veins of the other abdominal viscera, which contribute to the formation of the portal vein. Such a congestion, if persistent, gives rise to various complaints, as hemorrhoids, pain in the bowels, stomach, &c., and will even keep up an existing diarrhoea or dysentery. The pain in the stomach or bowels is not acute, but, on the contrary, dull and heavy, resembling very closely the pain experienced in dyspepsia. A number of these cases has come under my observation, and I have cured them by relieving the congestion in the portal circulation.

Much might I say yet in regard to the various functional derangements of the liver, and the symptoms to which they give rise, if I had more time at my disposal; but as the object I had in view, *i.e.*, the explanation of the phenomenon of jaundice, is accomplished, I shall herewith close my remarks on the pathology of this organ.

ART. II.—*On the Absence of Chlorides in the Urine of Persons affected with Variolous Diseases.* By Surg. J. C. M. MERILLAT, General Hospital, Staunton, Va.

The great importance of being able to form an early and reliable diagnosis in all cases resembling small-pox induces me to request the attention of your readers to the value, as a diagnostic symptom in that disease, of the presence or absence of the chlorides in the urine.

Careful observations of six cases of variola, of one of varioloid, of five cases which were supposed to be small-pox, but proved otherwise, and of three of rubeola (all that have lately occurred at this post), have led me to the following deductions, which I respectfully request those of your readers who may have more extended fields of observation to verify:

1st. That the chlorides are never present in the urine during the two first stages of small-pox.

2d. That they are absent from the beginning of the eruptive fevers—how much earlier, if at all, I have had no means of ascertaining; that, therefore, patients complaining of fever, pains in the back, etc., may be safely left in their wards, if the quantity of chlorides in the urine be normal.

3d. That the period of the re-appearance of the chlorides depends upon the intensity of the disease. In the distinct variety they re-appear between the eighth and fourteenth day of the eruption. Of the only two cases of confluent small-pox which I had an opportunity of observing lately, one died on the eighth day of the eruption, and in the other this day is the eleventh day of the eruption, and the chlorides have not yet returned. I am, therefore, unable to form an opinion in such cases.

4th. That the quantity of the chlorides in the urine of patients laboring under rubeola is normal during the whole progress of that disease; but it would not be safe to infer from that that every patient attacked with fever, pains in his back and head, vomiting, etc., and from whose urine the chlorides are absent, is *necessarily* laboring under the eruptive fever of small-pox, for I saw lately three patients in whom all, or nearly all, of these symptoms were present, and who recovered without any eruption. One of them says that he has never been vaccinated, and a careful examination of his arms failed to reveal any scar; neither does he know how to milk, therefore it could hardly have been a case of varioloid without eruption.

The only disease, besides small-pox and the three cases above alluded to, in which I have found the chlorides absent in the urine, is pneumonia, though I suppose further researches will swell the list.

To enable your readers to form an opinion as to the value of the observations from which the above deductions were drawn, I add the method which I have pursued in testing urine and one of the cases above mentioned:

To a small quantity of urine in a test tube, or in a clean, long and narrow phial, I add about one-sixth of its bulk of nitric acid, which I have previously ascertained not to contain any chlorohydric acid. I then add the same quantity of a strong solution of nitrate of silver, when a beautiful white curd forms, if any chlorides are contained in the urine, and more or less abundant according to their quantity. I find that only a few drops of nitric acid, as recommended by some writers, does not prevent the phosphates (often present in abnormal quantities, both in small-pox and pneumonia) from being precipitated, and they may mislead. I would prefer not adding any nitric acid than an insufficient quantity, as the phosphates can easily be distinguished from the chlorides, for a minute or two after adding the nitrate of silver, by their reddish color and floccular appearance.

Case—*Pemphigus, Variola*.—D. R. Kennedy, company "K," 14th North Carolina regiment, age 40, a farmer, was admitted October 22, 1863, with typhoid fever, on recovering from which a large abscess formed over the parotid gland. This did not heal completely till about the middle of January, 1864. He says that he was vaccinated during childhood, and that he has often seen the scar. He also says that he was re-vaccinated four times last winter unsuccessfully, though the same matter was used successfully with his children.

On January 22d, 1864, he awoke with fever and pains in his back; did not complain of headache, but of "itching" all over the body. On January 24th, an eruption of small red points on his forehead, and the same, mixed with vesicles (from quarter of an inch in diameter down), on his breast, attracted the attention of his ward surgeon, who asked for a consultation. The urine was tested and *the chlorides found to be normal*. He was ordered to be removed to a small room by himself. Jan. 25th.—*Chlorides still normal*. Eruption on the forehead rather more distinct; some of the vesicles on the breast larger (three-eighths of an inch diameter)

and more opaque. On consultation with all the medical officers in the hospital, three of them expressed the belief that it was a case of pemphigus; the others believed it to be a somewhat abnormal case of small-pox. The next morning, however, on the report of some surgeons that it had assumed all the appearance of small-pox, the man was ordered to the small-pox hospital. Three or four days after his admission there the eruption on his forehead disappeared entirely, whilst that on his breast went through the changes which are characteristic of pemphigus, except that the bullæ were not near as large as usual. The urine was tested every day during that time, and *invariably the chlorides were found to be normal*.

February 9th.—Awoke with severe pains in his loins, fever and vomiting, which continued the whole day. Tongue with a yellowish fur, mostly in the centre. *No chlorides in the urine*. Patient to be kept as cool as possible; no coffee or any other hot or stimulating drink. Feb. 10th.—Same as yesterday. *No chlorides in the urine*. Towards evening an eruption of minute elevated papulæ began to appear on the forehead. He was ordered a mercurial purge. Feb. 11th.—Tongue still considerably furred in the centre. Anorexia. Pains in the back continue. Eruption more distinct on the forehead. *No chlorides in the urine*. Throat sore. To use as a drink a solution of chlorate of potash, one ounce to a pint of water. Bowels have been freely moved. Feb. 12th.—Tongue still furred. Appetite returning. Throat better. Eruption very thick on the face; less so over the body. *No chlorides in the urine*. Pains in the back continue. Feb. 13th.—Has been very restless during the night. Pains in the back continue. Vesicles on the face very numerous and in some cases threaten to become confluent. Ordered the whole face to be covered with a plaster of carbonate of zinc two parts, oxide of zinc one part, rubbed into a paste with peanut oil. Throat still improving. *No chlorides in the urine*. February 14th.—Rested badly last night; frequently rubbed off parts of the plaster, which seems to have been too thin (about the consistence of thick paint). Not having any more of the carbonate of zinc, used flour instead of it. Tongue clean and moist. Appetite better. Bowels rather costive. Ordered a laxative. *No chlorides*. Feb. 15th.—Appetite moderate. *No chlorides*. Feb. 16th.—Pustules matured on the breast, and maturing on the legs, very numerous, but distinct from the knees down. Plaster covers the face completely. Eyelids not swollen at all, though he says his eyes hurt him at times. Bowels regular. Appetite better. To have three ounces of wine daily. Feb. 17th.—Doing well. *Slight traces of the chlorides in the urine*. Feb. 18th.—Says he feels well to-day. No fever. The ectrotic plaster fell off in some places to-day, and was not re-applied, as the pustules under it did not look as if they would fill. Strict injunctions were left with the nurse, however, to re-apply it if he saw the least sign of their filling. *Chlorides deficient* (not absent). Phosphates abundant. Feb. 19th.—Sitting up. *The chlorides have returned*, but the urine is very turbid, and loaded with phosphates. Feb. 20th.—Continues to im-

prove. Urine clear. *Chlorides normal*. Pustules on the face aborted; their appearance is that of large (quarter of an inch diameter) hemispheres, of natural color. Feb. 29th.—Still improving. Color of the face natural, rather bleached. No red spots like other convalescent small-pox patients. March 5th.—Discharged from the small-pox hospital, with but two "pits" about the face (doubtful whether from the small-pox), but much pitted about the body and limbs. No appearance of the pemphigus.

As somewhat connected with the above, and as it may be interesting to those of your readers who may desire to make observations on the urine in different diseases, but who, like myself, are unable in these war times to procure a microscope of high magnifying powers, I shall add that I have found one magnifying 100 linear diameters sufficient for that purpose. At least, I have repeatedly observed all the crystals (with the exception of cystine) delineated in "Bennett's Clinical Lectures" with an instrument of that power. I believe that the plates on the urine in that work ought to have been marked 75 diam. instead of "250 diam."

ART. III.—On the Application of Smith's Anterior Splint.

By RUSSELL MURDOCK, Assistant Surgeon P. A. C. S.

We desire to snatch from undeserved obloquy a great boon, in our opinion, to the suffering of the army, which has unfortunately, by its too frequent misapplication, been made a very curse. We allude to the "anterior splint" used by Professor N. R. Smith, of Baltimore.

Any one, who has ever seen the proper application of the exceedingly simple and strikingly neat apparatus, has his sense of mechanical propriety shocked, as he glances through the surgical wards of many of our military hospitals, with the ungainly and uncomfortable appearances presented by the unfortunates undergoing *injudicial suspension* by their lower extremities. Let him ask any medical attendant his opinion of the treatment of fractures of the bones of the leg and thigh by means of the above splint, the response will be almost uniformly unfavorable to its use. He will be told of excoriations, ulcerations, abscesses, and deformities of all sorts; most unfortunately the information is correct.

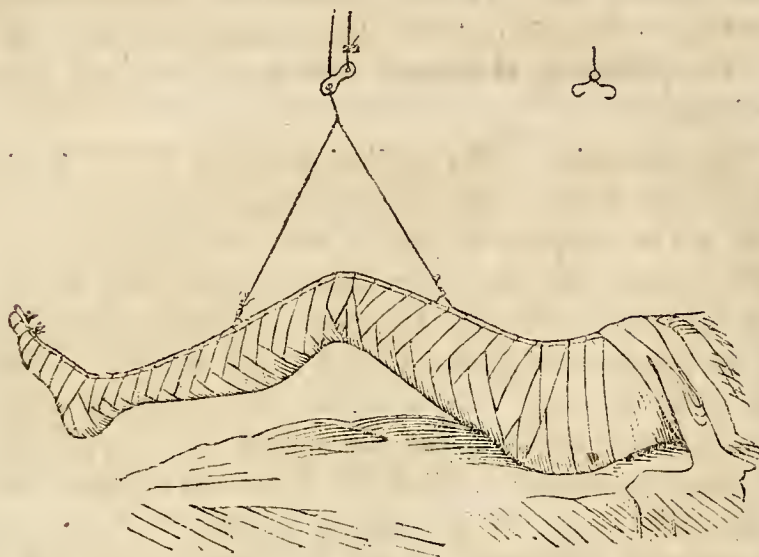
Now "dead men," we are told, "tell no tales," but living, walking—no hobbling—limping ones do; and of this misused apparatus many bad ones are related. We have heard of one poor fellow suffering agony for weeks, yes months, in this machine, from simple fracture of the femur, resulting in angular deformity and loss of the foot itself. Immediately before applying ourselves to the present communication, we were induced, by feelings of friendship, to visit an old patient in a neighboring hospital. We found him strung up in mid air by some unaccountable connection to a piece of bent wire, with a bandage applied at intervals of some inches, not attached to the perineum or pelvis. By this neglect, the upper end of the wire, which we recognized as "Smith's splint," was at least half a foot from the body. Can he

escape without "excoriation, ulceration or abscess?" These and the frequent request by friends for information upon practical points in the application of this splint, have induced us to use your well conducted and already extensively circulated sheet in endeavoring to furnish the desideratum. Articles, we are aware, have been already written on this subject, both in the "American Journal of Medical Sciences," and the "Virginia and Maryland Medical Journal," but few of the profession, at present, have access to either of these volumes.

By application to the medical purveyor, we are furnished with a splint and its appendages, sufficient for most purposes, but not as complete as the one now used by the originator. For example, the wire is too slight, and none, that we have as yet seen, sufficiently large for a person beyond medium stature. A cord is attached to the splint, which is separate in the one he uses; the latter has, at its two extremities, a couple of sharp-pointed double hooks, the breadth of the splint, similar to those represented at figure *a*. By means of these, the distance between its two ends may be increased. Without such a moveable modification, it will be impossible to treat fractures below the knee. The last censure we make on the splint has reference to a loop universally tied in the centre of the bifurcating cord attached to the splint. The purpose of balancing the splint at its centre of gravity, when applied, is entirely nullified by this loop. It prevents likewise the possibility of uniform tension along the limb when we use different degrees of obliquity in the cord.

This splint can be made either of wood or wire. For lightness and convenience in application, the wire one is that most commonly used. The first thing we do is to bandage the splint from end to end, both for neatness and compactness. In cases of compound fracture, however, when the wound is on the anterior surface, we leave fenestrated apertures over the opening or openings. The patient is placed upon his back, with both limbs free. The sound limb is taken as a criterion for proper measurement for flexures of the splint. These are three: first, immediately over the ankle-joint; then at the centre of the patella; and, finally, at the bend of the groin. The foot portion should project beyond the great toe, and that for the abdomen as high as a line with the last floating rib. This is to gain an adequate hold on the splint by a spica bandage. The angles of the flexures should be of about equal degrees, viz: sixty-five degrees; differing in direction in which they look—the middle one looking upward, and the other two downwards. Two points may be mentioned at this stage, both of which are of great importance; cross pieces of wire, intended to strengthen the splint in a majority of cases, fall upon the knee or ankle joints. This can easily be remedied by knocking them out of the way prior to bandaging the splint itself. The neglect of this precaution has, in one case which came under our notice, produced ulceration into the ankle-joint. The second point has reference to the plane of the abdominal portion. All the rest of the splint has its plane, in breadth, horizontal; but here we are necessitated to adapt it to the abdominal parietes by bending it downwards

and outwards. Cotton batting of sufficient thickness, or five or six layers of cotton cloth, the breadth of the splint, is placed along the whole anterior surface of the fractured limb, excepting in cases of compound fracture, with the wound in front, as above mentioned. An assistant now supports the limb at the knee, making sufficient traction *to adapt the limb*



to the flexures made in the splint, which, being an exact mould of the sound limb, must necessarily prevent shortening. Another supports the heel, keeping the great toe pointing upwards. No side splints are necessary, except where there is great tendency to lateral displacement. The surgeon now takes a roller bandage in his hand, applies a few interrupted pieces along the limb, pinning them on the top, over the splint, as a temporary support to the limb: one at the middle of the sole of the foot; a third below the knee, and a fourth and fifth at the lower and upper thirds of the thigh. Prior to adjusting, we have caused to be driven into the ceiling or rafter a staple, and through it we pass the loose end of the supporting cord, and then attach it in the upper hole of the block. It is hardly necessary to mention that this block is simply for convenience in elevating and depressing the limb as required under different circumstances. Sufficient cord, and some to spare, is generally furnished; what is over may be either rolled up or cut off. The unattached end, provided with a hook, should be made to hang sufficiently high to keep the heel two or three inches from the bed, hooking it on to the centre of gravity of the bifurcating cord. Another requisite is, that this cord should hang immediately over the centre of the patella when we are applying the splint. The bed should, at this stage, be advanced from the wall, so as to be moved back, as far as necessary, after the application of the splint. By this means we get, in part, the extension to the limb by the obliquity of the cord thus produced. This obliquity varies in different cases; as a general rule, the higher up the bone the fracture is, the greater the obliquity required. We are governed pretty much by the facility of overcoming the muscular contraction and the comfort of the patient. In fracture of the bones of the leg, no obliquity is required.

The tendency of the cord is to become vertical, that of the limb to assume the horizontal, and the resultant force of these

two forces pulls along the course of the fractured femur. We are of opinion, however, that much less extension by this means is necessary than is generally supposed; the limb is bandaged along the whole length of a rigid splint, precisely moulded to the limb, which seems to us to be a very potent means of overcoming the tendency, of the fractured bone, to override. The two certainly, however, are adequate to prevent shortening in all cases. If there is a tendency in the patient to slip down in bed, and consequently to allow the cord to assume the vertical, we can counteract it by elevating the foot posts of the bed.

The next stage is to bandage the limb closely, not *tightly*, to the splint from toe to groin, and from thence to the pelvis, the latter effected by the spica bandage. The whole of this is placed over the cotton batting, splint and interrupted bandage; this latter is left to support the limb should the bandages become soiled. No tumefaction bandage is required. In cases of compound fracture we require the following modification in the bandage, viz: to arrest our bandage below the wound, and re-commence another above it. The space left is intended for the application of dressings—which should be changed as often as deemed necessary—and over them an independent bandage. Should this permanent bandage be soiled, or should it hurt the patient at any place, it should at once be taken off, the part examined, relieved, and then properly re-adjusted. This is a very easy matter; but a general opinion prevails that, when once applied, it should never be touched. Now we know no splint in which the test of its proper application is perfect freedom from pain except this one. We next move the bed back to produce the required obliquity. The heel should be raised not more than two inches from the bed.

Covering for the patient is effected by doubling two sheets lengthwise, stitching them as far down as the first arm of the bifurcating cord, and pinning them below. The blanket and coverlet in the same manner.

In closing, we would remark that this apparatus has been successfully used in fractures of the bones of the thigh and leg, Potts' fracture excepted—in diseases of the hip and knee joints—in painful ulcerations and wounds—extensive abscesses where uniform compression and rest is desired—and where extension as well as rest is required, as in coxalgia, it is likewise beneficial.

Had we not taken already so much of your valuable space, we would like to give the satisfactory results of cases corresponding to the above classes treated by this instrument.

I trust that the unfavorable statistics, unjustly charged to the score of this most useful apparatus, but by rights to its misapplication, may be revised, or at least that we may have better success attending its use in the future.

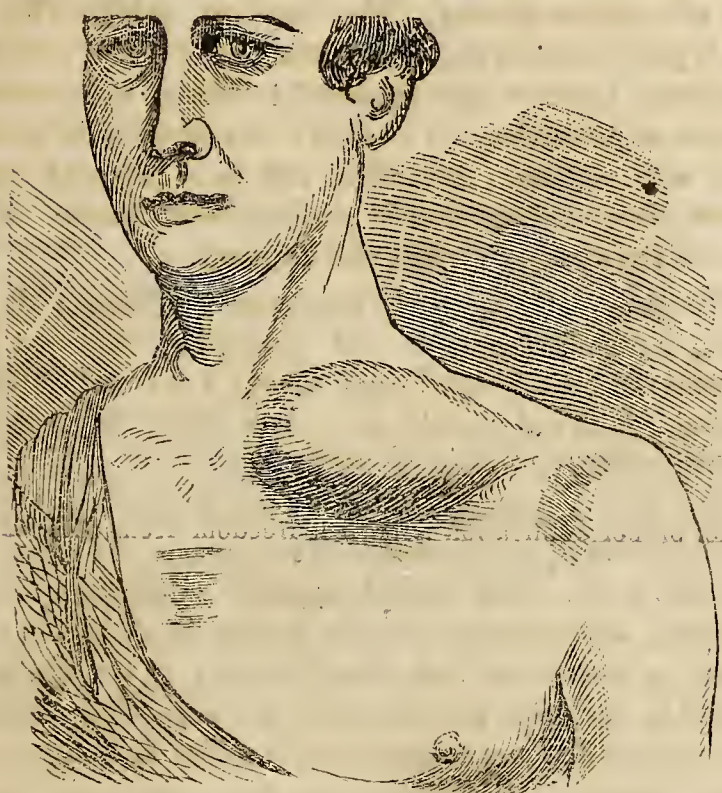
ART. IV.—*Resection of three-fourths of Clavicle for Osteo-Sarcoma.* By Surg. CHARLES BELL GIBSON, Richmond.

Jackson Neill, farmer, Scott county, Virginia, age 40, general health good, was brought to me by Dr. Carmack of

same county, for removal of an osteo-sarcomatous tumor of left clavicle.

It appears that some twelve months ago Mr. Neill had a fall which partially fractured the clavicle, and that eight months subsequently he received a blow, from the sudden and violent starting of a horse, against the shoulder of the same side, which, it was supposed, again fractured the bone. A sudden enlargement of the bone occurred immediately after this injury, which subsided in a few days, under diligent use of cold water, leaving, however, a small tumor near the sternal articulation.

This tumor increased in size steadily, extending along the shaft of the clavicle towards the acromial end, downwards on the chest, and upwards and backwards into the neck. It



is at this time larger than his fist, and has the mixed hard and soft feel of osteo-sarcomatous tumors. It extends from the sternal articulation three-fourths the length of the clavicle, tapering down to the point from its extreme height, which is about an inch exterior to the sternal articulation.

There is no pain in the tumor, and the only inconvenience is slight difficulty of deglutition if patient is lying on the left side. His respiration is not at all affected.

Pulsation of carotid and axillary arteries distinct. Sub-clavian artery not felt pulsating.

Jan. 30th.—*Operation*: Present Surgeons Peticolas, Sorrell, Michel, J. B. Read, J. S. D. Cullen and H. L. Thomas, and Dr. Carmack.

An incision was made half an inch interior to the sternal articulation, over the middle of the tumor and along the middle of the clavicle to its outer fourth portion. The integument was dissected upwards and downwards from the tumor and bone, and the attachment of the pectoralis major and first part of deltoid muscles divided. The upper and lower borders of the clavicle being freed and fully exposed,

and the subclavian muscle separated by the knife-handle, a large blunt curved needle was passed along the under surface of the clavicle from before backwards, carrying with it a chain-saw, and the bone sawn through at the commencement of its outer fourth portion.

The end of the bone was now seized by Fergusson's "lion forceps" and raised, and the attachments of the subclavian muscle very carefully divided.

The sternal articulation was opened in front with caution, and the tumor became easily moveable. The dissection was continued to its posterior aspect, and its connections gradually detached. The sterno-cleido-mastoid muscle afforded an anterior and posterior investment to the tumor, its fibres being spread out in the form of a fan, and completely separating the tumor from the vessels and nerves of the neck. With great care the tumor was gradually dissected from the posterior investment of the sterno-cleido-mastoid muscle, and the disarticulation being completed from behind, at the sternal articulation, the tumor was finally raised and entirely removed from its bed.

Two small muscular arteries required ligature, and a branch of the external jugular vein was also tied. The amount of blood lost did not probably exceed four ounces, and the time occupied in removing the diseased mass was about forty minutes.

The line of incision was connected by silver wire sutures, a thick and soft compress applied over the flap and sustained by a bandage which also secured the arm to the side of the chest and supported the elbow.

The formidable description of Dr. Mott's "*Waterloo Operation*," as he calls it, in which forty ligatures were applied, and four hours required for its performance, had not prepared the operator for the facility with which this large tumor was removed, nor for the entire concealment of important arteries, veins and nerves. So complete and protecting, in fact, was the muscular septum between them and the tumor (the expanded sterno-cleido-mastoid) that even the pulsations of the two great arteries were not visible. The subclavian vein, always an object of great anxiety in this operation, was not seen at any time in the dissection along the under surface of the clavicle or tumor.

Jan. 30th, 6 o'clock P. M.—Patient comfortable. Ordered tincture opium forty drops.

Jan. 31st, 10 A. M.—Patient has slept tolerably well; has had his breakfast; suffers no pain; is very comfortable.

Feb. 1st, 10 A. M.—A good night. Appetite good. Ordered sulphate magnesia half an ounce.

Feb. 2d.—Dressed wound. Union at inner and outer portions to the extent of three inches each way.

Feb. 2d, 3d, 4th, 5th, 6th and 7th.—Visits and dressing each day. A little brandy and water administered three times each day, from regard to old habits. Appetite and sleep perfect. Patient takes exercise about his room. Flap adherent to tissues beneath. Discharge healthy, not abundant. Granulations of central portion of line of incision a little pale, but improving.

Feb. 9th, 10th, 11th.—Daily visits and dressings.

Feb. 21st.—Wound entirely closed, and patient leaves for home to-morrow. Arm sustained by sling and kept closely to side of chest.

ART. V.—*Case of Pericarditis and Double Pleurisy, with Effusion. Reported by Surg. E. S. GAILLARD, Medical Inspector.*

I transmit the following clinical notes of a case of pericarditis and double pleurisy, with effusion, observed by me in General Hospital, No 1, Savannah, Georgia, at the period of my inspection in November last. I am indebted to Surgeon Wm. Gaston Bullock, in charge of this hospital, and to Assistant-Surgeon J. Haring, having immediate charge of the patient, for the notes presented:

Private J. C——, Company "K," 57th Regt. Ga. Vols., was admitted into General Hospital, No. 1, Savannah, Ga., on the 9th of November, 1863.

The History of the case was most unsatisfactory. No surgeon's report was sent with the patient, and he was not able to give a clear account of himself. All that could be ascertained was, that he had been sick about five weeks, previous to his admission into this hospital; was taken sick with fever, pains in his side, &c. About the third week of his sickness, he had commenced "to swell," and since that time had suffered much from shortness of breath; had coughed a good deal, but never expectorated much.

State of Patient when Admitted.—Patient is greatly exhausted; pulse not susceptible; skin cold; respiration thirty-six per minute; general anasarca condition of the body. A more careful examination was deferred on account of his great exhaustion, which was partially attributed to his having travelled several miles in an ambulance. The patient's condition is nearly the same (two hours after his admission) as when first seen; no pulse to be felt at the wrist.

Percussion reveals flatness over his whole chest; most so on the right side anteriorly and over the præcordial region; the latter is unnaturally prominent.

Auscultation shows that the respiratory murmur is greatly diminished in both lungs. This condition amounts to an almost entire absence of the same, except in the upper-thirds; there is bronchial respiration over the whole of the posterior portion of the thorax. The heart's sounds are feeble and distant, scarcely perceptible; patient breathes with great difficulty; has an anxious, distressed expression of countenance; coughs but little, and does not expectorate; tongue is clean and moist.

Progress of the Case.—The morning following his admission, the patient appeared to be more comfortable; had slept well during a part of the night; pulse is perceptible, but extremely weak and intermittent, two or three beats being followed by a shorter or a longer pause; no proper estimate as to the frequency of the pulse per minute can be formed: the same irregularity exists in the heart's beat; respiration

twenty-six per minute; no change in the respiratory sounds. For the next two days no *material* change took place in the patient's condition. He gained, however, some strength, his appetite improved, and his respiration became somewhat less difficult and distressing. From the 14th day of November, (the sixth since his admission,) his condition became rapidly worse. The skin became dry and hot; the pulse rose to one hundred and twenty, and remained very feeble; respiration thirty. Erysipelas made its appearance, first on the right side of the neck and face, and afterwards in his right foot and leg; the dyspnoea became very distressing; he had to be supported in a sitting posture; suffered with constant cough, without, however, any expectoration. He died early on the morning of the 17th of November, 1863.

The Diagnosis of the case was made out to be pericarditis, with double pleurisy. The symptoms exhibited by the feeble pulse, anxious expression, distant and feeble sounds of the heart, together with præcordial fullness and extended flatness on percussion, led at once to the suspicion of pericarditis, with effusion. A further, and more extended examination, discovered also double pleurisy, with effusion. *Post-mortem* examination verified this diagnosis.

Treatment.—Owing to the exhausted condition of the patient, a stimulating tonic and supporting treatment was adopted and mainly relied upon, though a few small doses of calomel, squills and digitalis were administered, together with vesication over the region of the heart.

Post-Mortem Examination.—Six hours after death, there was presented a general anasarca condition of the body. Inspection of the chest showed apparent enlargement of the left side; measurement, however, proved the right side to be larger by nearly one inch, the deception of the eye being caused by the great prominence of the præcordial region.—Extensive and strong adhesions, both recent and old, existed in the pleuræ of both sides of the chest; also large quantities of lymph, resembling lumps of fat, with serous effusion in both pleuræ, the latter being much greater in the right than in the left side. Some engorgement existed in the posterior and lower portion of both lungs. The pericardium was largely distended with serum and immense quantities of coagulable lymph, some floating in the serum, other portions encasing the heart, like fat, which could be readily peeled off. No other signs of disease in the heart were discovered.

This case is interesting chiefly on account of its great rarity, and on account of the profuse deposit of the products of acute inflammation. However common it is to see all of the serous sacs of the body distended in anasarca, it is seldom, even in military hospitals, (where are congregated the subjects of unusual exposure,) to find two or more of the serous sacs of the body simultaneously invaded by a common disease; the degree of inflammatory action being identical in all and the specific results entirely similar. It may be proper to mention that at the period of my examination, (about one week before the death of the patient,) there was a marked absence of that usual harmony in the rational and physical indices, ordinarily observed under similar pathological condi-

tions. There was no orthopnoea, and in the movements necessary to a careful examination of the patient, no dyspnoea was manifested.

ART. VI.—*Case of Gun-Shot Wound of Kidney.—Recovery.*
By R. J. PERRY, Assistant Surgeon P. A. C. S.

The records of military surgery show that gun-shot wounds of the kidney are almost always fatal, and being so considered, the unfortunate victim is too often left to his fate without proper attention. The following case presents several points of unusual novelty and interest, and teaches the important lesson that the surgeon should never abandon, as hopeless, any case of injury, however unpromising it may seem. Patients do occasionally recover from wounds of the kidney as well as from lumbar abscesses, caused by renal calculi, and should therefore always be treated with proper care throughout.

Lieut. A., 2d Tennessee infantry, in perfect health, of robust constitution and abstemious habits, was wounded in battle of Shiloh, on April 6th, 1862, by a Minie ball entering immediately below the heart, and passing out through the upper portion of the left kidney. There was considerable hemorrhage causing excessive prostration. In this condition he was captured by the enemy and removed to Pittsburg landing on Tennessee river, several miles distant from the battle-field, where he remained for six days without any attention, not even the removal of his bloody clothing, or dressing of his wounds. He was then placed upon a transport and conveyed to Louisville, Kentucky, and sent to hospital for treatment.

During the month of July following, whilst his wounds were still discharging profusely, he was attacked with typhoid fever, and a large abscess formed in the lower part of abdomen, about one inch to the left of the linea alba, which caused great pain. The second or third week in August he was removed from Louisville to Camp Chase, by way of Cincinnati. Several days after his arrival at Camp Chase, very much enervated from the prolonged attack of fever, the abscess above referred to opened outwardly, and discharged an immense quantity of dark sanious fluid mixed with urine.—This greatly alarmed him, and the extreme mental anxiety added to his fearful nervous prostration, came near proving too formidable for the unfortunate victim, but all of these difficulties were combatted by a good constitution and the inflexible determination of a veteran soldier to such a degree, that when an exchange of prisoners was effected, he was able to proceed to Vicksburg, Miss., where he was released about the first of October.

He commenced his journey homeward, (Lynchburg, Va.,) travelling only during the day, resting at night, suffering much from his wounds and abscess, which still continued to discharge an admixture of unhealthy pus and urine. In about two weeks he reached Knoxville, Tenn., (at which place I was then on duty,) manifesting symptoms of very great nervous prostration. The second day after his arrival at Knoxville I was called to see him, at the house of his sister, at 9 o'clock, A. M., and found him with a severe chill, followed by high

febrile reaction. On examination I found the anterior wound entirely healed and cicatrized—the posterior wound and abscess very irritable, manifesting no disposition to heal, and both discharging, though not profusely, a thin sanious fluid, mixed with urine. He complained of severe, excruciating pains in lumbar region, passing but little urine through the urethra—secretions generally deranged. I ordered warm stimulating poultices to wound and abscess, and administered one grain of extract of hyoscyamus.

I visited him again at 4 o'clock, P. M., found him restless, looking pale, anxious and alarmed, pulse irritable and frequent, administered anodyne for the night. I saw him the succeeding morning at 9 o'clock; rested rather comfortably during the night, still suffering from pains in lumbar region, but much more composed, pulse regular but frequent—continued warm applications to wound and abscess, and anodynes to relieve pain. For several days subsequent he was annoyed with rigors simulating intermittent fever, but which gradually subsided, leaving him much debilitated and troubled with night-sweats, which were overcome by the use of elixir vitriol, tannin, and sponging with stimulating lotions. I then placed him upon nutritious diet and tonics, such as iron, tincture of bark and quinine. The discharge of urine and unhealthy pus continued for some sixteen or eighteen days, when the discharge of urine ceased, and the pus became more laudable. Simple lint and sweet oil dressings were then substituted for the warm applications.

The second or third week in November the wound was almost entirely healed, with but slight discharge, and about the 15th of December he resumed his journey to Lynchburg, and in a short time was entirely restored, with some little impairment of general health. I met Lieut. A. in October, 1863, in perfect health, with the exception that upon too free exercise or exposure he was annoyed with some uneasiness and pain in lumbar region.

CONFEDERATE STATES HOSPITAL REPORTS.

Report of wounded treated in Field Hospital of Hindman's Division, Army of Tennessee, after the battle of Chickamauga. By CARLYLE TERRY, Chief Surgeon.

[We call especial attention to the valuable report of Surgeon Terry, and regret that we have not room for his accompanying remarks, of which, however, we present the following summary:

He first points out the great success of his operations, and compares them with his experience after Shiloh, where, with every advantage of position and appliances, he failed to reach such results. These cases were, many of them, treated in a stable, and most of them in rooms without fire. His success in such rooms was much greater than with those who seemed to be better situated. The patients were wet for days, and at all times exposed freely to wind and rain.

His only case of tetanus was No. 22, and he remarks that four cases after Shiloh were like this one, after amputation of

arm, (which is not the experience of surgeons generally, the lower limbs seeming to be most liable to the disease.)

Chloroform was used in every instance without bad consequences.—Ed.]

Case 1.—Marion Carlisle, second lieutenant company "G," 19th South Carolina; gun-shot wound; right knee-joint implicated, and femur comminuted; amputation middle third of thigh. Stump attacked with erysipelas about the fifth week, which caused much delay; finally recovered and was sent to General Hospital No. 16.

Case 2.—W. F. May, sergeant company "C," 10th South Carolina; wounded right knee, precisely like case 1. The amputation did well until the stump was nearly healed; but this case having been in a room with fire, five weeks after operation stump assumed a phlegmatic appearance, symptoms of pyemia appeared and he died October 16.

Case 3.—W. A. Gray, private company "K," 24th Alabama; compound fracture right thigh; amputation middle third, union by first intention, and discharged October 9.

Case 4.—J. B. Claridy, private company "C," 24th Alabama; wound of left knee joint; amputation lower third of thigh. Stump healed by first intention. Sent to the rear October 9.

Case 5.—John H. Dew, private company "A," 24th Alabama; compound comminuted fracture thigh; lay twenty-four hours on field. Amputation middle third forty-eight hours after wound was received. At first appeared to react but slowly, but was doing very well when sent to General Hospital, October 31.

Case 6.—W. F. Todd, private 10th South Carolina; compound comminuted fracture leg; amputation; condition good until 29th, when erysipelas supervened, which gave way to treatment. Sent to General Hospital, October 31, doing well.

Case 7.—A. B. Skipper, private company "A," 10th South Carolina; compound comminuted fracture; attempt to save the limb. After failing to arrest secondary hemorrhage (knee joint being found filled with pus,) amputation performed middle third thigh; general condition bad; no effort to rally; profuse suppuration supervened; secondary hemorrhage from sloughing of the artery. Died November 2.

Case 8.—W. W. Spivey, company "K," 22d Alabama; compound fracture thigh; amputation lower third; condition bad at time of operation owing to great loss of blood on the field; improved rapidly, and was sent to the rear, October 3, in a very promising condition.

Case 9.—Marion Barrett, corporal company "E," 19th Alabama; compound comminuted fracture; amputation lower third thigh; wound healing rapidly by granulation when sent to General Hospital, October 3.

Case 10.—H. W. Shilling, private company "A," 19th Alabama; compound comminuted fracture thigh; amputation middle third; condition bad; suffered much pain. Died of exhaustion, September 28.

Case 11.—J. W. Powell, private company "A," 19th Alabama; compound comminuted fracture thigh; amputation lower third; condition good; stump granulating finely when sent away, October 3.

Case 12.—J. C. Minslett, private 39th Alabama; compound comminuted fracture thigh; amputation middle third; constitution bad; lost much blood on the field. Died September 30.

Case 13.—W. T. Kirby, private 50th Alabama; amputation middle third thigh; condition bad; stump did not do well; muscular and cutaneous tissues contracting very much, leaving bone protruding, which was again amputated, after which patient did very well, and was sent to General Hospital, October 13.

Case 14.—James Middleton, private company "L," 10th South Carolina; compound comminuted fracture leg; flap operation; recovered without any complication; sent to General Hospital, October 31.

Case 15.—Joshua Collins, private company "F," 10th South Carolina; same as above, but sent to General Hospital later, (November 22,) on account of not uniting so soon.

Case 16.—C. B. Foxworth, company "I," 10th South Carolina; compound comminuted fracture leg; amputation below the knee; progressing rapidly towards recovery, and sent to General Hospital, October 9.

Case 17.—W. Russell, corporal company "I," 28th Alabama; seat of wound not registered; amputation below the knee; nearly well and sent to General Hospital, September 30.

Case 18.—Robert Hatcher, private company "F," 24th Alabama; amputation arm; nearly healed and sent to General Hospital, October 3.

Case 19.—C. A. Pate, private company "C," 24th Alabama; gun-shot wound elbow joint; arm amputated; union by first intention; sent to General Hospital, October 3.

Case 20.—T. H. Lennard, private company "C," 24th Alabama; same as above; union by first intention; sent to General Hospital, October 3.

Case 21.—J. M. Smith, private 39th Alabama; amputation arm middle third; did not do well; had erysipelas for ten days, and wound not disposed to heal; left in the hands of the enemy November 26; will probably die.

Case 22.—W. P. Hunkerpillar, private company "B," 19th Alabama; wound elbow; amputation arm; patient did well until October 3, tetanic symptoms appeared, suppuration ceased, and he died October 7.

Case 23.—Ambrose New, sergeant company "I," 24th Alabama; resection elbow joint; very nearly well when sent to General Hospital, October 31.

Case 24.—John A. Jackson, private company "D," 28th Alabama; resection right shoulder joint; case did very well; wound filling up rapidly; October 30, the wound being nearly well and no suppuration, was sent to General Hospital.

Case 25.—W. F. Rodgers, private company "H," 28th Alabama; resection shoulder joint; did well, and was sent to General Hospital, October 30, in same condition as Jackson.

Case 26.—J. W. Clark, private company "A," 19th South Carolina; compound comminuted fracture thigh. This was one of the cases in the room with fire. This case progressed well towards bony union, as was shown by *post-mortem*. Pyemia developed on the 30th of September, and he died on the 8th of November.

Case 27.—William Kirkland, private company "A," 19th South Carolina; compound comminuted fracture thigh. Treated with double inclined plane; recovery complete, with only three inches shortening.

Case 28.—L. G. Williams, private company "C," 19th South Carolina; flesh wound of left thigh, and compound fracture same leg; treatment, fracture box; recovered.

Case 29.—George Little, private company "D," 19th South Carolina; compound comminuted fracture thigh; upper third; treatment, double inclined plane. This case was in the room with fire; pyemia made its appearance 29th September. Died October 5.

Case 30.—George Scott, sergeant company "D," 24th Alabama; compound comminuted fracture thigh; treatment, double inclined plane; recovery, bony union, and but slight discharge when sent to the rear, November 17.

Case 31.—Peter Chalons, company "G," 24th Alabama, aged 57; compound comminuted fracture thigh, very near the head of femur. No disposition to bony union; profused suppuration, and patient died of exhaustion on 5th November.

Case 32.—F. Moore, private company "K," 24th Ala-

bama; compound comminuted fracture left thigh; treatment, double inclined plane; united very rapidly, and was able to walk, November 15th, with crutches when sent to rear.

Case 33.—John Jenkins, private company "D," 28th Alabama; compound comminuted fracture thigh; same treatment; patient 45 years old; union perfect, and patient able to walk on crutches when sent away November 10.

Case 34.—J. Bishop, corporal company "D," 22d Alabama; ball passed through both hips, and bulbous portion urethra; bled profusely on the field; right femur fractured near its neck; suffered great pain for fifteen days; urine poured through wound, and repeated hemorrhages, from which he died October 8.

Case 35.—J. C. Archer, private company "D," 19th Alabama; compound comminuted fracture thigh; upper third; did remarkably well, and was sent to General Hospital October 20; treatment, double inclined plane.

Case 36.—J. M. Phelbs, private 22d Alabama; received two wounds; fracture neck of scapula and head of humerus, and compound fracture of thigh. No operation. Died of pyemia October 12.

Case 37.—Sydney Anderson, private 22d Alabama; compound comminuted fracture middle third thigh; double inclined plane; sent to General Hospital, doing very well, November 16; bony union.

Case 38.—Thomas Williams, private 39th Alabama; compound comminuted fracture thigh. No operation. Did not do well, and left in hands of enemy; will die.

Case 39.—Asa Johnson, private 39th Alabama; compound comminuted fracture thigh; treatment, double inclined plane; did well, and was sent to General Hospital November 16.

Case 40.—J. Winningham, private company "K," 10th South Carolina; wound of left lung; case progressed very well up to the 29th September, when he imprudently walked out and accidentally fell down, when a severe hemorrhage supervened and patient slowly declined, and died October 10.

Case 41.—W. A. Green, private 25th Alabama; ball passed through right lung, entering just above right nipple; did remarkably well until October 3, then sent to General Hospital.

Case 42.—W. C. Pou, sergeant 10th Mississippi; ball passed through lung, upper lobe; about six days after had pneumonic symptoms, lasting five days; recovered.

Case 43.—James Morrison, private company "B," 19th South Carolina; wounded through chest and in fleshy part thigh; ball passed through lung; no hæmoptysis, and no constitutional disturbance, but rapid recovery; sent to rear October 10.

Case 44.—C. M. Turner, private company "K," 19th South Carolina; wounded in lung; case made slow progress towards recovery, though suppuration was profuse until 17th October, when he died of hemorrhage.

Case 45.—Hugh Malony, private company "A," 24th Alabama; wound of left lung; recovered without any serious pulmonary disturbance; sent to General Hospital October 31.

Case 46.—H. T. Owens, private company "G," 22d Alabama; ball passed through right wing ilium, coming out near left acetabulum; fecal matter escaped through the wound, and large quantity of blood poured through the bowels; never did well, and, at battle Missionary Ridge, was left in hands of enemy in dying condition.

Case 47.—E. F. Cooper, lieutenant company "G," 24th Alabama; wound of pelvis, ball entering centre of os innominata and not found; created but little disturbance and doing well; he was sent to General Hospital October 30.

Case 48.—W. Burke, private company "B," 24th Alabama; patient's health was much impaired; ball entered posterior aspect of thigh about midway, passing downwards along course of femoral vessels and came out near the knee. On

the fourth day the wound assumed a gangrenous appearance throughout its whole extent, and the limb below became much swollen and with a livid hue, and also lost its temperature. Immediate amputation was resolved upon; the stump had a bad appearance. Death in twelve hours.

Case 49.—W. B. Brown, corporal company "F," 24th Alabama; ball passed through abdomen; passed fecal matter from both orifices for fifteen days; finally both healed, and feces passed naturally; no peritoneal symptoms; sent to rear, in safe condition, October 31.

G. S. Medical & Surgical Journal.

RICHMOND, MAY, 1864.

AYRES & WADE.....PUBLISHERS AND PROPRIETORS.

Amputation, Disarticulation and Resection Statistics of the Confederate States Army.

We are indebted to the Surgeon-General for the privilege of preparing from the original papers now on file in his office, the following operative statistics, as reported by officers of the medical staff, from the beginning of the war down to the 1st of February of this year:

Amputations of the Thigh, whole number, 507: Primary, 345; recovered, 213; died, 132; 38 per cent. Secondary, 162; recovered, 43; died, 119; 73 per cent.

Amputations of the Leg, whole number 464: Primary, 314; recovered, 219; died, 95; 30 per cent. Secondary, 150; recovered, 76; died 74; 49 per cent.

Amputations of the Arm, whole number 434; Primary, 294; recovered, 252; died, 42; 14 per cent. Secondary, 140; recovered, 87; died, 53; 37 per cent.

Amputations of the Fore-Arm, whole number 114: Primary, 69; recovered, 61; died, 8; 12 per cent. Secondary, 45; recovered, 35; died, 10; 22 per cent.

Disarticulations, whole number 135; Primary, shoulder joint, 79; recovered, 54; died, 25—31 per cent. Primary, elbow-joint, 4; recovered, 3; died, 1—Primary, wrist-joint, 7; recovered, 5; died, 2—Primary, hip-joint, 3; recovered, 1; died, 2—Primary, knee-joint, 5; recovered, 2; died, 3. Secondary, shoulder-joint, 28; recovered, 8; died, 20—71 per cent. Secondary, elbow-joint, 3; recovered, 2; died, 1—Secondary, knee-joint, 6; died, 6.

Resections, whole number 130: Primary, shoulder-joint, 41; recovered, 28; died, 13—27 per cent. Primary, elbow-joint, 25; recovered, 22; died, 3—Primary, wrist-joint, 2; recovered, 2—Primary, knee-joint, 2; died, 2. Secondary, shoulder joint, 26; recovered, 19; died, 7—21 per cent. Secondary, elbow-joint, 29; recovered, 23; died, 6—Secondary, wrist-joint, 1; recovered, 1—Secondary, hip-joint, 2; recovered, 1; died, 1—Secondary, knee-joint, 2; recovered, 1; died, 1.

Amputations of the Foot: Primary—Chopart's, 16; recovered, 13; died, 3—Symes's, 2; recovered, 2—Pirogoff's, 4; recovered, 2; died, 2. Secondary—Chopart's, 8; recovered, 7; died, 1; Symes's, 4; recovered, 4; (1 unsuccessful, requiring subsequent amputation above the ankle-joint.)

A vast number of additional operations are received, but without positive results, and, therefore, they have not been included in the above list.

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We may be well satisfied with the results of these statistics, which, carefully excluding all doubtful cases, are compiled from those operations only that have reached a positive conclusion. A general summary of the above tables shows that the mortality after 1,814 operations, including amputations, resections and disarticulations, amounted to 632, giving a death ratio of 34 per cent.

By referring to the mortality tables after amputations subsequent to many of the great battles of modern days, taken from the pages of Lagouest, which will be found in our *Chronicle* for this number, the reader will be able to draw his own comparisons.

The only statistics on this subject from the Federal army we find in the United States Army and Navy Journal for November, 1863, which gives the amputation statistics for September, October, November and December of 1862, as follows: Whole number, 1,342; deducting 516 under treatment January 1, 1863=826. Of this number, 336 died; a mortality of 40 per cent.

The journal to which we owe the above observation gives the following table: Whole number, 1,342; returned to duty, 100; furloughed, 25; deserted! 11; discharged, 350; died, 336; secondary operation, 34; under treatment, January 1, 1863, 516.

The Prospect before Us.

It is gratifying to inform our readers that this Journal, in spite of the many difficulties which have surrounded its rise and progress, has already attained a larger circulation than was ever reached before by any Southern medical periodical, and promises, in the future, to surpass the most sanguine expectations of its friends.

The usual impediments to the success of similar enterprises, it is true, have been fortunately spared us. Subscriptions have flowed in rapidly, and, more important still, contributions of a useful and instructive character, and in great variety, reach us from every source. Our communications with the literature of other countries have been singularly successful, for we pen our hasty editorial with the *April* number of the London "*Lancet*" lying on the table.

The great difficulty, not yet overcome, is to be found in the want of the various elements necessary to the mechanical preparation of the Journal, more particularly the want of paper, although other minor troubles might be mentioned. We need room to do adequate justice to the wealth of material, both original and selective, now in hand, and our monthly installments are felt by all to be condensed to a fault, and requiring only more space to add vastly to their interest and value.

We may venture to hope that this objection will shortly be obviated, by enlarging our publication to twice its present size, and in the meantime we must ask our many friends and contributors to exercise that patience and forbearance which may be reasonably claimed under the circumstances.

To obviate the delay in receiving the Journal, so much com-

plained of by the army subscribers, the publishers have made arrangements to pre-pay their postage at this office, which will prevent a recurrence of these repeated disappointments.

Let us hope that, by the commencement of our *second* half year, with increased size and increasing aid from our collaborators, and with an earnest desire to do justice to those who have promptly and generously given us their support, we may not fail in winning from our readers a moderate amount of approbation and confidence.

CHRONICLE OF MEDICAL SCIENCE.

Comparative Results of Primary, Intermediate and Secondary Amputations. Translated from the French of LE-GOUEST, by H. L. THOMAS, M. D.

The results of primary are more favorable than those of intermediary amputations, and the results of the latter less so than those of secondary. These approach pretty near to those which Maligne* has given the name of pathologic amputations, and which he considers far less dangerous than traumatic amputations; pathologic amputations being practised for chronic affections of the limb, and traumatic amputations for accidental lesions.

The observations of our predecessors upon the result of amputations practised at different stages have been, in part, confirmed by the experience of our late wars.

In the English army, the primary and intermediate operations practised in the Crimea, from the 1st of April, 1855, to the end of the war, were—

		Deaths.	Ratio per 100.
Primary operations	600	175	25.3
Intermediate operations	89	38	42.7

In the hospitals of the Bosphorus, from the 26th of September to the 27th of November, 1854:

		Deaths.	Under treatment.	Cured.	Ratio per 100.
Primary operations	154	18	40	96	11.6
Intermediate operations	65	42	7	16	64.6

The proportion of deaths following primary operations practised in the Crimea is greater than in the hospitals of the Bosphorus, where the operated upon were at once placed under the best conditions; it is not so great, on the contrary, as a consequence of intermediate amputations, because already, at the time these were done in the hospitals of the Bosphorus, these crowded establishments no longer presented conditions so favorable as the ambulances of the Crimea.

In the French army, all the amputations, not including those of the fingers and toes, amounted during the whole campaign to 4,467; divided thus:

		Deaths.	Pensions.	Ratio per 100.
Primary operations	3,234	2,337	897	72.2
Intermediate operations	852	600	252	70.4
Stage not determined	381	194	187	51
	4,467	3,131	1,336	

Among these operations, the double operations numbered 120, with the following results:

		Deaths.	Pensions.	Ratio per 100.
Primary operations	53	38	15	71.7
Intermediate operations	67	51	16	76.2
	120	89	31	

The primary operations practised in the English army give, on

* Archives G n rales de M decine, 3e s rie, t. xiii. et xiv.

the one hand, 25.3 deaths per 100; on the other, 11.6 deaths per 100; and the consecutive operations 42.7 and 64.6 deaths per 100. The advantage then is with the first over the second. On the contrary, in the French army, the primary operations give 72.2 deaths per 100, and the consecutive 70.4 deaths per 100. There is then a slight difference in favor of the latter. But it must be recollected that the operations in which the stage was not determined only give 51 deaths per 100; that it is very probable they were primary, and that, in adding them to the primary operations, they only present a mortality of 70 per 100. According to the figures, then, there would only be an insignificant difference between the primary and consecutive operations practised in the French army of the East. We will explain ourselves presently upon the large number of our losses, among our operations, compared with those of the English army.

Lastly, the remarkable statistical facts of Malgaigne* upon the major operations practised in the hospitals of Paris, and the more recent researches of d'U. Trélat, appear to place beyond a doubt the advantage of pathologic over traumatic amputations.†

	Amputations.	Deaths.	Ratio per 100.
Malgaigne,	Pathologic 343	176	51.3
	Traumatic 166	104	62.7
U. Trélat,	Pathologic 568	223	39.3
	Traumatic 476	261	55.6
	Undetermined 106	28	26.4

General Results of Amputations.—Some surgeons, and among those of highest authority, Malgaigne and Velpeau, while admitting amputations in indispensable cases, are disposed to practise primary amputations as seldom as possible, and are inclined to lay it down, as a general principle, that the efforts for preservation of the limb, in every case, does not expose the patient to a greater hazard of death than amputation.‡

This proposition cannot be accepted, in a general manner, in military surgery; the difference of result obtained from the field and from the civil hospitals is very great, and is due to the causes that we have enumerated above. We are forced to admit, that the general results of amputation do not afford a large amount of success; but it is but just to acknowledge that this partial comparative statistics of success after or without amputation, including those which we have given upon fractures of the thigh, treated conservatively or by amputation, are not yet sufficiently numerous to establish a law, and that so far they only present elements of solution to the question without settling it definitively.

The general mortality of amputations is very variable under different circumstances and according to the reports furnished by different surgeons; Boucher estimated that two-thirds of the amputations were fatal; Faure assures us that, after the battle of Fontenoy (1745), out of 300 amputations, only 30 or 40 were successful; Bilguer reduced to one or two the successful amputations practised during the seven years war (1756). Larrey,§ invoking all his souvenirs, after thirty years of war, thought he had saved the three-fourths of his amputations. A. Blandin, surgeon of the Republic, says that, with the nicest care, we may hope to save three-fifths of our operations.

These are merely expressions, without figures and beyond criticism. In the following table will be found details which, probably without being rigorously exact, are nevertheless more certain, because of the large numbers which go to make up their elements:

	Operations.	Deaths.	Ratio per 100.
Naval battle before Brest, 1794—FERCOQ,	80	2	3.3
Battle of Neubourg, 1794—PERCEY and LARREY,	106	8	7.5
Naval battle of Aboukir, 1798—English army,	30	—	—
Id.—French army, from MASSELET,	14	3	21.4
Campaign of New Orleans, 1814—GUTHRIE,	52	12	23.1
Battle of Toulouse, 1814—GUTHRIE,	99	32	32.3
Battle of Waterloo, 1815—GUTHRIE,	372	191	51.4
Naval battle of Navarino, 1827—DEL SIGNORE,	58	14	24.1
Paris, Gros-Caillon, 1830—H. LARREY,	17	9	53.0
Paris, Hôtel-Dieu, 1837—MÉNIÈRE,	24	17	70.7
Paris, Rouse, 1830,	14	7	50.0
Paris, Saint-Louis, 1832—RICHERAND,	15	11	73.4
Siege of Anvers, 1833—H. LARREY,	64	14	21.9
Spain, 1836-37—ALCOCKE,	77	26	46.8
Expedition of Constantine, 1837—SÉDILLOT,	23	17	73.9
Paris, 1848—Académie de Médecine—(Divers),	120	56	46.6
Paris, 1848—BAUDENS,	14	9	64.1
Danish army, 1848-50—DJOURP,	243	66	39.5
Campaign of the East—English army, 1854-56,	998	273	27.4
Campaign of the East—French army (capital operations only),	4,466	3,131	70.2
Total,	6,797	3,916	57.63

The 6,797 operations collected in this table give the average of deaths as 57.63 per cent., a figure approaching very near the estimate of A. Blandin. An enormous difference exists between the ratios of mortality when taken separately. It was during the expedition of Constantine that the mortality was greatest, 73.9 per cent.; then comes, successively, that of Saint-Louis, in 1832, 73.4 per cent.; of the Hôtel-Dieu, in 1830, 70.7; of the French army during the Crimean campaign, 70.2 per cent.; of Val-de-Grace, in 1848, Baudens, 64.1; of Gros-Caillon, in 1830, H. Larrey, 53 per cent.; of the battle of Waterloo, Guthrie, 51.4; lastly, of Paris, 1830, Rouse, 50 per cent. The sad conditions to which the wounded were exposed during the disastrous expedition of Constantine, during the long war of the Crimea, after the fatigue of a battle of giants like that of Waterloo, in the crowded wards of Saint-Louis and the Hôtel-Dieu, the possible moral situation of wounded soldiers and citizens, victims of the street fights, appears to us sufficient to explain this great mortality.

The small mortality from operations, after certain engagements, Aboukir—English army 0 per cent.; naval battle before Brest, 3.3 per cent.; fight of Neubourg, 7.5 per cent.; Aboukir—French army, 21.4 per cent.; siege of Anvers, 21.9 per cent.; New Orleans, 23.1 per cent.; Navarino, 24.1 per cent.; appears to us more difficult to understand. It is a very remarkable fact that the operations practised after a naval battle give, generally, a smaller mortality than the others; perhaps, it may be attributed to portioning the wounded among a larger number of vessels; to the robust and hardened constitutions of the marines; to the absence of any disturbance of their habits—the vessel being for them a habitation and becoming the hospital after having been the field of battle. We will remark here, that the campaigns of Neubourg, New Orleans and siege of Anvers, which furnish the smallest mortality after operations, were short and light campaigns, during which the troops had not the time to become fatigued, and where they were surrounded with cares and resources without number. It is well to recollect that surgery is generally very successful at the beginning of a campaign; but practise it as the war is prolonged, upon men in less favorable conditions, and its success is more and more diminished.

This is the great cause of the afflicting mortality of our operations in the campaign in the East, 70.2 per cent., where inclemency of climate, epidemics and crowded hospitals were working their influence. The relatively small mortality of operations in the English army, our ally in this campaign, is surprising; the amount, 27.4 per cent., is nearly about the same as that estimated by Larrey after thirty years of war. The great success of English over French surgery manifests itself as well in civil as in military practice; it has so moved the surgeons on this side of the channel, that certain

* Archives Générales de Médecine, 3e série, t. xiii. et xiv.

† Bulletin de l'Académie de Médecine, 1862.

‡ Bulletin de l'Académie de Médecine, séance du 12 Septembre, 1848, t. xiii., p. 1431.

§ Malgaigne, Bulletin de l'Académie de Médecine, t. xiii., séance du 5 Aout, 1848.

English statistics, recently published in France, have been highly questioned, and considered as embodying manifest errors.

For our part, we accept the statistics given in the work entitled, "Medical and Surgical History of the British Army which served in Turkey and the Crimea, during the War with Russia, in the years 1854, '55, '56; London, 1858;" and presented in 1858 to the English Parliament. We will, nevertheless, remark: 1st. That the number of operations amounting to 998, and that of the deaths to 273, really reaches the number of 1,080 operations on the one hand, and of 310 deaths on the other, which is apparent on an analysis of the English statistical table; hence, it results that the mortality was 28.7 per cent. instead of 27.4. 2d. That 737 amputations under treatment, out of 1,080, were transferred from the Crimea and Scutasi to England, and that they are included among the number cured.

The difference of mortality, 1.3 per cent., between 27.4 per cent., figure of the original table, and 28.7 per cent. of the revised table, is not of enough importance to arrest our attention. But we cannot help noticing the uncertainty which hangs over the fate of the 737 amputations transferred to England and credited as cured. Did none of the patients succumb from the time of the transfer to 1856, the date at which the surgical history of the English campaign, as well as the war, ended? Did all the patients arriving at Chatham, numbering 667 out of the 737 transferred, survive the operation? We may legitimately doubt this, when it is remembered how many of the operated upon died during the transfer from the Crimea to Constantinople, and from Constantinople to France, and even afterwards, when it is known, moreover, how many fatal accidents supervene during the cicatrization and before the complete cure of an amputation. It is pretty certain that the authors of the English statistics have not included in their list of mortality, prematurely gotten up, the losses resulting from all the secondary and deferred accidents of amputations, and that they have thus given, without designing it, an average of mortality much lower than it really is; while, in the estimates relative to the French army, the result of the operations is not determined until the 31st of December, 1857; that is to say, eighteen months after the campaign; the long period embraced by these statistics comprehends the primary and consecutive results of the operations.

These considerations may modify to some extent the recorded success of English surgery in the East, but they do not explain the numerous reverses of our practice during the same campaign. Observations of a different order give us a more positive solution, and one of capital importance. The larger the army, the greater is its number of sick and wounded, and the greater also is its mortality and penury, in spite of the wisest precautions and the best directed foresight of administrators and surgeons. The effective force of the English army in the Crimea was never as great as ours. It did not reach beyond 97,864 men; ours was 309,000 men. Their effective force was almost wholly renewed, and was not completed until the spring of 1855; ours only received successive contingent additions. The number of English wounded by fire and sword by the enemy was only 12,164; ours amounted to 39,868.

In the discussion which took place in the Academy of Medicine in 1862*, to which the surgical statistics of the civil hospitals of London gave rise, a good deal was said about installation, hygienic arrangements, and the material and alimentary resources found in these institutions and represented as being much superior to those of our own. Personally, we are not in possession of any document upon this subject; but during the campaign of the East everybody had an opportunity of seeing the English ambulances and hospitals, poorly organized at first, rapidly ameliorated under the impulse of commissioners with full power sent from London

to inspect them, and acquire, as well with regard to location, the bedding and clothing of the patients, as to the alimentary regime, a degree of comfort which our much more numerous establishments could not equal, despite the zeal, the devotion and the efforts of the medical and administrative staff. Let us add that the transfer of our patients from the Crimea periodically encumbered our hospitals at Constantinople, perpetuating purulent infection and hospital gangrene; while the English transfers, necessarily less numerous than our own, were almost all directed at once to the mother country; that the wounded and those operated upon of the English army, did not leave the Crimea until they were under way of cure, while those of the French wounded or operated upon were at once, or within a few days, sent away to make room for others succeeding them, without interruption. If transferring is an excellent measure, it is upon condition that it is only applied to men in conditions to be transferred: when the necessities of war oblige us to transfer indiscriminately, day or night, all the wounded and all operated upon, not only to avoid crowding, but also in order to be able to accommodate the fresh wounded, transferring must be attended with grievous results. It was impossible for us, in a military point of view, to retain upon the hostile soil of the Crimea a large number of wounded, who might have become a serious embarrassment to the command in case of retreat or of re-embarkment.

Every unprejudiced mind will find in these different conditions, imposed by events, the reasons for the difference in the results obtained. Perhaps it would be well to take into consideration, in order to embrace all the elements of this question, the influence exerted upon the success of operations by the race of men who bear them, their hygienic habits and their alimentation. It is a last resource for explaining, in a general manner, the results of English surgery, whose success is sometimes of akin to prodigy.

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* Bulletin de l'Académie de Médecine, t. xxvii.

CONFEDERATE STATES



VOL. I.

RICHMOND, JUNE, 1864.

No. 6.

ORIGINAL COMMUNICATIONS.

ART. I.—*Prophylactic Effects of Quinine.* By SAMUEL LOGAN, P. A. C. S.

The following table was compiled with the view of enabling the writer to arrive at some definite conclusion as to the prophylactic power of quinine. The items were collected, either by himself or the medical officer in charge, to whose cheerful co-operation he is much indebted. It will be observed that in no single camp was the agent unanimously adopted; in many, indeed, its use was resorted to by a minority only. So far as my object was concerned, this was rather fortunate than otherwise, as it has enabled me to *compare* the results among those situated under the same identical circumstances in all particulars, *except the use or neglect of the agent* whose effect we are investigating. I would call attention to the fact, that much more importance should be attached to the results developed under these circumstances, than when the experiments are made with separate corps, *all of whom* either took or neglected to take the quinine as a prophylactic. I know of no statistical researches, except of my limited extent, in which this peculiarity obtains—in fact our statistical knowledge on the subject is extremely limited—and I therefore deem it of some im-

portance to invite the attention of the profession to the table I have collected. All of the troops from whom these items have been gathered, were stationed in the most highly malarious regions in the Confederacy.

With the exception of a few favored localities, the whole country has to be abandoned by its white inhabitants as the summer approaches. They usually resort to the pine lands or the sea-shore about the first of May, and return about the first of November.

The peculiar typography of our Southern Atlantic lowlands is well known, but may be briefly mentioned. The coast line is indented with numerous inlets, bays and salt-water creeks, which form a complicated network extending from ten to twenty miles from the sea-shore proper. These creeks and estuaries are generally fringed with wide plains of salt-marshes, except when the larger rivers freshen them and form the valuable fertile rice lands. The islands formed by this network of water courses are, with the exception of the marshes, composed of a light sandy soil, in which the stratum of clay lies from three to six or eight feet below the surface. They were devoted to the culture of the famous "sea-island" or long staple cotton. As we come more towards the interior, and especially near to the larger streams, this light sea-island soil more or less disappears, and we have level tracks of a stiffer earth, occasion-

ally sandy, but in most cases having a stratum of red clay, either near or quite up to the surface. The undergrowth is here extremely luxuriant, and reminds one of the pictures of African jungles. The country is intersected with swamps, some of them cultivated in rice, and presenting a considerable alluvial deposit upon a bed of blue clay. Next to this belt of "low-lands," we come to the *pine* region; a dry and porous sandy soil, with clay at a considerable depth, the sand in the higher localities being of a bright yellow or white, and in the lower ones dark grey. This flat belt of "pine barrens" gradually changes into the rolling country of the interior, and so on up to the mountain slopes.

The malarial fevers prevail throughout the sea-islands, with a few exceptions; through the whole of the belt of level low-lands, and to a considerable extent in the lower of the pine lands. The higher portions of the latter, and certain favorable localities along the sea-shore, and among the sea-islands, are more or less exempt, and are resorted to during the summer months. The enemy have occupied almost all of the healthy sea-shore, while our lines of defence extend through the sickly low-lands, just within the belt of sea-islands. In order to promote the health of the troops, such of them as are located along the lines in the neighborhood of healthy pine land resorts are moved in the summer months to such places. Those commands, however, who do the picket duty, even though their summer camps be pitched in a healthy pine-land village, are still subjected to malarial influences while on this out-post duty along the line, day and night, at an average of about one-third or one-fourth of the time. Those commands who were, as a general rule, retained during the summer in their healthy resorts, were not provided with quinine to use as a prophylactic, and have not therefore been made the subjects of investigation. They had little or no fever among them; while those whom it was necessary, for strategical purposes, to retain in the unhealthy country, and the cavalry who did the picket duty in sickly localities were provided; and a reference to the table will show to what an extent each command availed itself of the agent, and what were the results.

In some cases the quinine was taken in the morning, in others at night, four grains being the quantity used. Some of the medical officers believed before-hand in its efficacy; others held their opinions in suspense, while a few disbelieved in its use as a prophylactic. I was among those who were not inclined to form a definite opinion until a larger mass of evidence had been collected in such a manner as to show the comparative results among those placed under identical circumstances, in all particulars, excepting the use of the agent. It will be well to make a few remarks concerning the different corps and their precise localities.

1st. *The Rutledge Mounted Riflemen and Horse Artillery* did picket duty along the line between the Coosauhatie and the Conohatchie rivers, a section of country of an undoubted malarious character. They were camped in a tolerably healthy pine land village, McPhersonville, three and a half miles from the Pocotaliga station, on the C. and S. R. R.

2d. *Captain Earle's Battery* was stationed during the

summer of 1862, on James Island, near Charleston S. C. (a location of notoriously bad reputation for health) until September, when it was moved to a position about six miles below the Hardeeville station, on the C. and S. R. R., not far from the Savannah river. They gained nothing by the change, so far as a healthy camp was concerned. The next summer they were stationed at and near the Green Pond station, between the Conohahee and Ashepoo rivers. This, also, is a highly malarious location.

3d. *Company I, Third S. C. C.*, as I am informed by Dr. W. M. Bailey who has charge of them, was "stationed in the interior of Wadmalaw Island, a situation, from the evidence of the physician who practised there before the war, exceedingly unhealthy as regards fevers, in the midst of swampy lands and numerous stagnant ponds."

About four grains of quinine was given each day at "Retreat" in which quantity it was administered from the 1st July until the 1st October.

Dr. Bailey goes on to say that not being supplied with a sufficient amount of the article he continued, from that date, to administer it in reduced doses of two grains until about the 15th October. "Whether from the effect of climate, or from the reduced quantity given, I had at this time many more cases of fever."

4th. *Company B, 6th regiment, S. C. C.*, was stationed near the river bank of the Edisto, a situation personally known to me as very unhealthy. With them also the quinine was reduced from October 1st, from four to two grains, and stopped on the 15th.

5th. *Company D, 5th regiment, S. C. C.*, arrived at its camp near the Conohahee river on the 27th September, having been stationed in Charleston during the midsummer. The men were exposed on picket in a very malarious country, at the most unhealthy season, but Captain Z. Davis, in command, immediately commenced to issue "four grains of quinine in a wine glass of whiskey" every morning at reveille, and continued it until after frost.

6th. *Blake's Battery* was stationed during the whole summer on James Island. They moved camp three times, but were always located in positions which Assistant Surgeon Mallory C. Rivers in charge—who has kindly furnished me with the details—knows to have been unhealthy, from his intimate acquaintance with the facts before the war. The quantity of quinine issued was, as in the other cases, four grains daily.

7th. *Kirk's Partizan Rangers*, and the five companies of the 4th S. C. C., were situated in all respects as the Rutledge Mounted Riflemen, and had the same duty to perform. They also took the same quantity of quinine.

8th. *The Washington Artillery* spent the summer in a very malarious location, amid the swamps between the Edisto and Ashepoo rivers. Assistant Surgeon W. S. Canuau, writes that "on the 1st of July, 1863, the administration of quinine was commenced, in four grain doses every night and continued until the 12th of November."

I have only to remark, in conclusion, that in no case has any

cumulative effect been observed to follow the continued use of the quinine.

It would seem from these statistics that, though not an absolute prophylactic, the degree of protective power possessed by the agent fully warrants its use. If four-fifths of the fever cases are prevented, it should surely be used. It may be well to explain that under the head of "*number who took quinine irregularly*" are included those who would forget or neglect to take it some three or four days in the week, or take it one day and forget it the next, or omit it for a week at a time.

CONSOLIDATED TABLE OF CASES.

Total number who took no quinine, 230; had fever, 134; ratio per 1,000 of fever cases to patients, 582.60, or 1 in every 1.71 patients; ratio per 1,000 of severe cases to total cases, 313.43, or 1 in every 319 cases.

Total number who took quinine irregularly, 246; had fever, 96; ratio per 1,000 of fever cases to patients, 390.24, or 1 in every 2.56 patients; ratio per 1,000 of severe cases to total cases, 291.66, or 1 in every 3.71 cases.

Total number who took quinine regularly, 506; had fever, 93; ratio per 1,000 of fever cases to patients, 193.67, or 1 in every 5.16 patients; ratio per 1,000 of severe cases to total cases, 326.53, or 1 in every 3.06 cases.

ART. II.—*Read's Case of Excision of Knee-Joint.* Reported by M. J. De Rosset, Assistant-Surgeon P. A. C. S.

Captain C. K., 10th Louisiana infantry, aged 26 years, of good constitution, was wounded by a Minie ball, November 27, 1863, and, after some transportation by ambulance over rough roads and by rail, entered hospital November 30th. His condition on admission was good, both as regards the nervous and vascular systems. He presented a small circular wound on the outer aspect of right thigh, one and a half inches above the external condyle, on a plane somewhat posterior to it, and a clean incision, one and a half inches long, touching as a tangent the outer and upper edge of the patella, where, he says, the ball was cut out. There appears to have been no hemorrhage, but utter inability to walk. Ordered moist dressings.

December 2d.—A thin serous discharge appeared at the incised wound this morning. The movements of the knee-joint are perfect. Ordered a saline aperient, moist dressings and absolute rest.

5d.—Serous discharge continues in minute quantities, mingled with incipient suppuration. No inflammatory action.

8th.—Complains of considerable pain in the joint; slightly accelerated pulse (84); but all appearance of local inflammation is prevented by cold affusions. At Surgeon Read's suggestion, warm fomentations were substituted for the cold dressings. At 9 P. M., local pain, swelling, congestion and heat well marked; serous discharge greater at wound of exit. Explorations with finger and probe discovered no fracture, or loose bone. Pulse 104, full.

9th.—Pulse 128; local symptoms increasing, a consultation was called, and excision was decided upon. An elliptical incision was made, with its concavity upwards, around the

patella, eight inches long, extending from over one condyle to the other, dividing the ligamentum patellæ. The joint was laid open; one and a half inches of the os femoris and half an inch of the tibia removed; the patella was uninjured, but was ablated also. No vessel required ligating.

The operation developed the following condition of things: There was a groove (as if it had been bored) extending from the external condyloid ridge of the femur to the superior edge of the cartilage covering the articular surface, and opening the synovial sac. The patella was untouched. The fluids in the sac escaped in large quantities, being reddish, thin, and containing clots of blood or shreds of fibrine, but no pus. The membrane itself was a little congested, but not discolored, and the parts adjacent and external to the joint extensively engorged with inflammatory exudation. This exudation had developed into good reparative material at the wound of exit, elsewhere it seemed to be degenerating into pus.

Silver sutures (two in number) were used to wire the bones, of which the adaptation was perfect; the entire wound was closed in like manner. (Surgeon Read operated, assisted by Surgeons Gibson and Michel and the hospital staff.)

A hastily-constructed box, similar to the one used by Mr. Butcher of London, was prepared to receive the limb, and a half grain of sulphate of morphia was administered.

10th.—Patient slept well. Pulse 124. Moist dressings.

11th.—Pulse 120. Ordered half an ounce of brandy every two hours, eggs, oysters and beef tea as diet. Suppuration commenced, probably thus early from the old exudation.

16th.—Patient has always been peevish, and his restlessness during the night produced some venous hemorrhage, (about six ounces,) easily controlled by injecting liquor ferri persulphatis. He naturally looks somewhat anæmic. Pulse 130.

18th.—Wound florid and healthy; some sutures were removed to facilitate the escape of pus. Pulse 110. Continue brandy, &c.

20th.—Slight hemorrhage during the night, (two ounces,) apparently from the granulations. A brisk cathartic was given, producing two evacuations. Complains greatly of the splint, which, from its hasty construction, is rather rude, and presses against both nates.

An apparatus, devised and adapted to this case, was then applied. It consists of three pieces. One a long posterior splint, extending from the upper third of the thigh to the superior border of the os calcis, narrow at the popliteal space, and supporting a movable foot-board, attached to the lower end by two rods; the whole being well padded to the sinuities of the limb. Two side splints, interrupted at the knee and preserving their continuity by two iron angular brackets, projecting laterally two and a half inches, permitting of cleansing, &c. These extend to within one inch of the malleolus on each side, and are well padded. A suspensory apparatus of arbitrary device (either Smith's anterior-wire splint or the simple canvas bag above and below) may be applied, and the whole suspended to an arrangement resembling Salter's apparatus, but admitting of lateral motion, by means of

rollers, which add materially to the ease of motion and comfort of the patient. To Acting Assistant Surgeon H. L. Thomas is due the credit of suggesting the use of the Smith wire splint, as a ready and efficient substitute for the iron brackets, and it is to be hoped that the success following this operation, the perfect security and convenience for dressings that this apparatus obtains, and the easy application of the wire splint, will induce surgeons in the field to weigh well the advantages of excision over amputation of the thigh in wounds of the knee-joint. The wire is to be bent into right angular recesses, at points corresponding to the knee, and wooden slats, padded, bound to them on the inner side, above and below.

22d.—The tumefaction bandage cuts the tendo-Achillis, and the whole is re-applied, a thin layer of cotton enveloping the foot and leg.

28th.—Has been comfortable since last report. To day, stomach is irritable from the administration of croton oil, which acted copiously. Pulse 98. Ordered synapisms to the epigastrium, ice, effervescing draughts and bismuth. The suture wiring the bone on the inner side came away this morning. Take half a grain of sulphate of morphia every night.

January 3d, 1864.—Internal half of incision closed. Appetite excellent, and is gratified with venison, partridges, turkey, &c. Is allowed one pint of porter daily.

7th.—Parts have a doughy sensation, receiving the impression of the fingers as in oedema. This is experienced more particularly on the outer aspect, extending from the angle of incision downwards to the sural muscles. Suppuration is healthy, and an increased flow can be produced by pressure along the tibia. Warm fomentations, with covering of oiled silk, were ordered.

10th.—Fomentations have been continuous, with marked subsidence of the swelling. No fluctuating point discovered. Bowels costive. Pulse 96. Ordered one ounce of Rochelle salts.

14th.—Wound healing from the external angle and from the apex, where pulsation may be observed communicated to the discharges by newly-formed vessels. Granulations florid, and contracting approximate lips of incision.

20th.—A few larvæ, deposited on the posterior splint by flies, necessitated the re-application of the splint, which was done without pain to the patient. Union, still of a yielding, flexible nature, has taken place between the bones; but no grating sound, nor any denuded bone, could be discovered with the probe.

28th.—Some indiscretion in diet has deranged the bowels and produced high fever. Pain in abdomen with borborigma. Pulse 140. Ordered, calomel, four grains; ext. colocynth co, five grains; camphor, two grains—mix and take immediately. Liniment camphor. comp. to abdomen.

29th.—Much better. Prescription acted well. Pulse 100. Ordered one grain of pulv. opium every two hours.

February 14th.—Improving rapidly. A thin serous discharge has replaced the purulent. About half an inch still unhealed. Applied starch bandage, with aperture for wound.

25th.—Sits up daily. An effort was made to remove the remaining wire, but it could not be discovered. Two small spiculæ of bone were brought away, which did not appear to be necrosed.

March 15th.—Digestive apparatus is kept constantly deranged by capricious and enormous indulgence; he therefore requires frequent administration of opiates. Sits up daily, and has attempted to walk with crutches.

April 1st.—There is now slight lateral motion between the bones and very little antero-posteriorly; the leg is well supported by the reparative material, without assistance of splint or bandage, affording the deduction that well-organized fibrous tissue, of a ligamentous character, is at present the bond of union. Will not time convert this into bone? The natural size of the limb is regained, but a small opening still remains externally to the median line, from which issues, in minute quantities, a thin serous fluid, mingling with traces of pus gathered at the surface. Measurement gives two and a quarter inches shortening for the affected limb. The foot has the natural eversion, and the limb, from trochanter to malleolus, is straight. A hardness and symmetrical roundness simulates the patella anteriorly.

Knowlton has been heard of to June 1—doing well and in excellent health.

ART. III.—*Indigenous Medicinal Plants.* By Assistant Surgeon W. T. GRANT, F. A. C. S.

If it is not presumptuous in me, I will ask a small space in your journal that I may call the attention of the profession to a few of our indigenous medicinal plants. I am bold enough to express the opinion that some of these plants now mentioned have never before been brought to the notice of the medical public in any way whatever. And should the good opinion which I have formed of some of them be confirmed by experience, I shall be well repaid for the labor which I have bestowed upon this branch of science. I tender the following observations, also, with the supposition that you will perhaps but rarely have contributions upon this or kindred subjects. And, perhaps, in consequence of this, my mite may be kindly received.

I will not weary your patience, nor impose upon the kindness of your readers with a dissertation upon the well-known virtues of cornus Florida, liriodendron tulipifera, eupatorium perfoliatum, smilax sarsaparilla, the salicidæ, and gelsemium semper virens, nor the different species of rubus and quercus, but will attempt to show new virtues in other well-known plants, or valuable virtues in plants hitherto unknown to the profession.

I cannot, however, neglect to mention the existence among us of the following old medicinal plants, the extracts from which have long been used: taraxacum dens-leonis, and datura stramonium. They are quite common, and may be found in nearly all the Confederate States. The leaves of the datura stramonium, when dried and smoked in an ordinary pipe, afford great relief in asthma. I must also men-

tion the following plants: *sanguinaria canadensis* and *lobelia inflata*, *asclepias tuberosa*, *aristolochia serpentaria*, *spigelia marilandica*, *melia azedarach*, *podophyllum peltatum* and *polygala senega*.

The *palma christi*, from the seeds of which is expressed the castor oil, can be grown to any extent with us.

A decoction of the leaves of *sambucus canadensis*, (common elder) answers excellently as a disinfectant, and is a safe application for offensive sores, wounds, &c.

We have quite a number of species of gentian, all of which perhaps possess tonic virtues.

I know of no more soothing, agreeable collyrium than an infusion of the young branches of *ulmus fulva*, (elm), or especially of *laurus sassafras*, (common sassafras). And the excellence of the domestic remedy hoarhound, (*marrubium vulgare*), in catarrhal affections, is well known.

The genus *smilax*, in addition to furnishing us with the fine alterative sarsaparilla, also affords a good remedy for diarrhoeas and dysenteries. This is *smilax pirmila*, (Darby), and is used in strong decoctions.

I am well satisfied that a strong decoction of any part of *Ilex opaca*, taken internally, will prove eminently useful, if not positively curative, in every variety of dropsy. It grows in all parts of Georgia.

And I think that by cultivation, any species of our common poppy could be made to produce opium. Somewhat over a year since, I saw a specimen of opium thus made, (a few grains only), and I supposed from its odor and appearance that it was equal to any from the East.

Our efforts to procure a reliable substitute for quinine, has thus far nearly proved a failure, unless the turpentine, as recently recommended in this journal, should answer; or common salt, (chloride of sodium), which has been very highly recommended to me. Indeed, we may very well believe that salt possesses good powers, as we know how excellent a remedy it is in enlarged spleen, "fever cake," which results from long continued intermittents. I have, to a limited extent, used the berries of *cornus Florida*, and also a compound decoction of the barks of *cornus Florida*, *liriodendron tulipifera*, and *prunus virginiana*, alias *cerasus serotina*, (wild cherry), and with very fair success. The "Georgia bark," (*pinkneya pubens*), among plants, seems to me to be entitled to the first place as a substitute for quinine, although I have used it but little. It grows very abundantly in lower Georgia. I will take the liberty of sending some of it to Prof. Jos. Jones, with the request that he will analyze it and publish the result.

Cephalanthus occidentalis, (button bush), which is also very abundant in lower Georgia, is esteemed very highly both in and out of the profession, as an excellent remedy in catarrhs, &c. I sometimes think that in combination with the wild cherry, it would be almost competent to arrest incipient tubercular consumption.

I shall now speak more fully of some three or four other plants, which I do not think have ever been mentioned by any writer.

The *gordonias lasyanthus* (Wood) grows quite abundantly in the tide-water districts of Georgia, and perhaps of other States. I have never analyzed it, and am not, therefore, very well acquainted with it. Its common name is loblolly bay. The bark of the roots, or stem, makes one of the finest possible poultices for certain conditions of wounds, &c. I have seen its effects, where, without it, I cannot see how extensive sloughing could have been avoided. I have heard the remark of an old practitioner to the effect that "nothing else need be used, if this fails, to arrest mortification." It seems to possess stimulating and other virtues which render it very valuable as an application to wounds having a tendency to mortification. Of course it would be an excellent application when it is desirable to excite a healthy suppuration.

Platanthera stricta, (*habenaria cristata*, Darby,) is an herbaceous plant very common in lower Georgia, and possesses curative virtues in the bite of the rattlesnake. Its common name here is rattlesnake's master. (There are several other plants all having this common name.) I have no doubt that it has some virtues of the kind from the abundant evidence furnished me by the people. Hunters cure their dogs with it when bitten. I have never seen it tested, and only mention it that it may be tried by others should the opportunity be presented. I may mention, as an evidence of the faith which some here have in it, that they firmly believe that a rattlesnake will not bite a man at all if he has only some of the root in his pocket.

Another remedy for the bite of the rattlesnake is the *baptisia perfoliata*, which is also very abundant here. I will only add the following evidence of its virtues, which is a statement taken from a letter to me from my esteemed friend, Prof. W. T. Fray, than whom there is no finer botanist in the South: "A gentleman in Florida had a negro woman bitten by a rattlesnake, and a physician was sent for at once. In the meantime a neighbor recommended that a decoction of the root of this plant should be used. It was done, and when the physician arrived the negro woman had entirely recovered."

In private practice, some years back, my attention was called to a plant, whose good effects in epilepsy, as reported, were extraordinary. And such wonderful cures were vouched for by intelligent citizens, that I determined to see for myself. And having an epileptic on hand, I administered the remedy. For two months during the time I used it, no paroxysm occurred, although they were frequent before. At the end of this time the patient went away and I saw no more of him. I also gathered a quantity of the roots and sent them to other physicians with the request that they should test it; but for some reason or other I never heard from any except one package. And the answer to this was a request to send more, that it did well. This is the extent of my practical knowledge of its utility as a remedy. But I have confidence to believe that it will be found an excellent remedy for epilepsy. And if so, why not in other neurotic diseases, as well—hysteria, chorea, tetanus, &c.?

I am unfortunate in not being able to give the exact name of this plant. I analyzed it at the time, and made it verno-

nia fasciculata, but that analysis is not reliable. I now know that this vernonia is not a native of the South. And if it is a vernonia stalk at all, it is oligophylla. But I am now quite well satisfied, although I have not seen it since, that it is a liatris, and most probably, spicata. If I could see it now I could determine it at once. It grows abundantly in Richmond, Columbia, and Warren counties, in Georgia, and I think is very widely diffused through the South.

I have just received No. 3 of this journal, containing Surg. W. A. Carrington's report of eruptive fevers, &c. In the latter part of this report he states that the saracenia purpurea has been recently used in small pox, and gave evidence of great future usefulness in that dire disease. Although it grows in Georgia, I have not seen this species of saracenia, as my opportunities for botanizing are limited. But I find here its cogeners, saracenia flava and variolaris, in the greatest abundance. And from the great similarity in habits, size, general appearance, and every thing that obtains among the species of this genus, I am inclined to think that a like similarity must extend to their therapeutics; and that if purpurea is valuable as a remedy in any particular disease, flava and variolaris and the other species would fulfill the same purpose, and equally as well.

ART IV.—*Report of three cases illustrating the Correlation existing between Erysipelas, Diphtheria (and Hospital Gangrene?)* By Assistant Surgeon H. S. CHALMERS.

Case 1.—Private George T. Weightman, Co. "A," 11th Va. Vols., admitted in General Hospital, Lynchburg, May 10th, 1862, with gun-shot wound of hand and fore-arm, received May 5th. He is a robust, healthy man, age 23, by occupation before enlistment a merchant. The ball entered on the dorsal aspect of the hand, between the metacarpal bone of the middle and third fingers, passed longitudinally through the carpus, and made its exit on the inner aspect of the fore-arm, two and a half inches from the wrist joint. The lower extremity of the radius is fractured, the ulna entire. The patient was treated in private quarters and the symptoms from the date of admission, as follows:

May 10th.—There is active inflammation in the limb, with severe pain, heat and swelling; sthenic fever, with pulse about 100. Ordered rest, light diet, and cold-water dressing, the arm supported on a pillow.

From the 11th to 15th, the inflammation has progressed to imperfect establishment of suppuration. The swelling has extended to the shoulders, and the pain is very severe. The pus is not healthy, is very abundant but mixed with sanious fluid, patient's strength and appetite are much improved, his fever is asthenic or hectic, pulse 120. Treatment ordered is wine, generous diet, warm water and oil silk dressing.

During the 16th and 17th the inflammation rapidly became erysipelatous; patient suffered with rigors and great debility and nervous disturbance. Treatment consisted of tincture

ferri chloridi with quinine, freely administered; wine and generous diet continued; and, locally, solution of nitrate of silver, from twenty grains to one ounce.

On 18th, false membrane formed on both wounds so dense as to arrest the discharge entirely. Free incisions were made to relieve tension, and on the edges of these the membrane rapidly formed, also on the abraded surfaces left by broken blebs.

On the 25th the erysipelas began to subside and healthy suppuration to be established; the patient convalesced slowly and was discharged from treatment July 11th.

The limb preserved the motions of pronation and supination; the wrist joint was completely ankylosed; enough control over the thumb and fore-finger to grasp a pen lightly.

On the 15th May, the day on which the erysipelas appeared in the injured limb, a child one a half years old, who was in the same room was taken sick and came under care of a private physician. 18th—I was invited to examine the child, and found the case to be one of diphtheria, the membrane lining the faucis upper part of pharynx, etc. The child died on the 19th.

On the 20th, a married woman, the sister of my patient, and who spent most of her time in the same room, complained of sore throat, and on examination I found several small patches of false membrane on the back of the pharynx with the glairy mucus discharge from the adjacent mucous membrane and from the nares, which is characteristic of the disease. She was relieved in two or three days.

Case 2.—Private Wm. G. Newman, Co. "H," 58th Va. regiment, was admitted in the General Hospital, Lynchburg, August 11th, 1862, with amputation of thigh at lower third. Was a healthy man, age 34, occupation before enlistment a farmer. He had been wounded August 9th, a fragment of shell striking him about the knee. Amputation was performed on the 10th, and the patient sent on to Lynchburg, a distance of seventy miles. Up to August 18th the patient did well. The stump remaining in a healthy condition, and the angles of the flaps (the operation by the flap method) uniting by the first intention. There were several cases in the same ward of wounds effected with ulcerative phagedæna, but no cases of gangrene in mass. On the 19th August the flaps began to slough, the patient presenting at the same time the usual symptoms of hot, dry skin; dry, red tongue; frequent pulse, thirst, loss of appetite, etc. Active supporting treatment was used, with, locally, creasote lotion, and the yeast and charcoal poultice. The sloughing continued to advance till the 30th, when the sloughing was arrested. There was no further sloughing for ten days, but the stump remained in an indolent condition; the granulations were large, flaccid and of a purplish hue; there was no laudable pus, but an abundant exudation of sanious fluid mixed with pus. The general condition of the patient improved somewhat.

On the 9th September the gangrene was set up afresh, and when giving the patient fluids they were observed to return by the nares; he had not complained of sore throat. An examination revealed the fact that the fauces and pharynx, as far

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back as could be seen, were covered with false membrane. The membrane was thin and easily removed from the surface.

On the 10th and 11th, it had advanced till it could be seen at the anterior nares. There was also an imperfect membrane formed on the track of the cauteries which were applied to the stump. Patient died on the night of September 27th.

Case 3.—Lieut. J. P. Canterbury, of Alabama volunteers, admitted in General Hospital, Lynchburg, November 20th, 1862, with gun-shot wound of shoulder, received September 17th. The ball entered on the front aspect of the arm, just below the joint, and passed downwards and backwards on the outer side of the bone. The shaft of the humerus was splintered, but its continuity not destroyed. At the time of admission all inflammation had subsided. The cicatrizing wound was attempting to close around a small mass of protruding granulations, indicating the presence of necrosed bone which could be readily felt with a probe, but was not detached.—There was abundant formation of callus around the injured portion of bone, and a free discharge of healthy pus from the wounds, both of entrance and exit.

Dec. 20th.—The patient was seized with rigors, pain in epigastric region, nausea and high fever.

On 22d, became delirious, and facial erysipelas is well developed.

On the 24th, the erysipelas has subsided down on the neck and chest, and attacked the wounded limb. In the wounded arm the form of the disease is phlegmonous. He has had several slight convulsions which come on whenever it is attempted to move him in bed.

On the 25th, there was formation of diphtheritic membrane on roof of mouth, fauces and pharynx, with difficulty of swallowing, and the return of fluids by the nose. The patient became comatose on the 27th, and died during the night following. At the time this case occurred two-thirds of the wounds in the wards were in a more or less gangrenous condition.

Trachea *Operation tabulated Rice*

ART. V.—A Case of Resection of the Shoulder-Joint. By WILLIAM ALEXANDER GREENE, Chief Surgeon Artillery, Third Army Corps, Army of Northern Virginia of the Confederate States.

In none of the joints is resection more frequently called for, and in none has it been attended with more beautiful results, than that of the shoulder. There have been a variety of processes devised for this operation. Those of M. Malgaigne and M. Bourguery for the longitudinal incisions, and those of Syme and Bent for the flap operations, seem to possess the highest advantages, and result in the most good to the patient. I think those with the longitudinal incisions merely, are to be preferred whenever circumstances will admit.

The fact of this operation having been so often deferred by our field surgeons, because of apparent lack of facilities and meagre appliances, together with the many cautions contained in some of our recent works on military surgery with

reference to operating "upon the field proper," has induced me to report a case operated upon under as unfavorable circumstances as we will often meet with, and with most satisfactory results.

Sergeant W. Hammond, aged 30 years, of the Purcell Battery, Pegram's battalion artillery, Third Army Corps, Army Northern Virginia, was wounded at the battle of Gettysburg, Pennsylvania, 2d of July, 1863, by a Minie ball entering near the posterior fold of the arm-pit of the left arm, passing through, lacerating the capsule, and producing extensive fracture of the humerus, splitting the bone from the surgical neck downwards for over three inches. He was brought from the battle ground immediately to the field hospital. There being no symptoms of vital depression and the patient in unusual good spirits, an operation was at once determined upon.

Operation.—Chloroform was administered until complete anæsthesia was induced. The patient being placed in the semi-recumbent position, I began by making an incision from the top of the coraco-clavicular triangle, and extending downwards for about five inches, dividing at one stroke the skin, the deltoid, and the capsule. The joint was thus freely exposed on the inner and upper surfaces, which gave great facility in the extraction of the head. *The long head of the biceps was divided*, and the insertion of the four articular muscles carefully cut with a probe-pointed bistoury. But finding great difficulty in extracting the head of the bone, which was much comminuted, I added to this longitudinal incision of Malgaigne a transverse cut, according to the modification of Textor, which gave to the external wound the shape of the letter L. The soft parts were then carefully separated from the bone, and the spiculae imbedded in the surrounding muscles removed, and the shaft divided with the ordinary saw as far down as injured. The operation was completed by ligature of a single artery, and the incision closed by the interrupted suture. The arm was placed in an improved apparatus, similar to that used for fractured clavicle. He was placed upon the floor of the barn in which I had my hospital, with a few straws under him, and no "pillows to support his arm." He remained there until the evening of the 4th of July.

When General Lee's army began to fall back from Gettysburg, at his own request, he arose from his bed of straw unassisted, getting into a rough army wagon. After proceeding several miles, the ambulance train was halted for a few hours, when, in attempting to get from the wagon, he fainted and fell to the earth. He was lifted up and borne by some comrades to a barn near by, and stimulants and coarse nourishments administered. I advised him to remain where he was, and trust to Nature and the generosity of the Yankees for recovery.

He was then left, and heard from no more until exchanged; arriving in Richmond September 28th, 1863, less than three months from date of the operation, and having traveled from Gettysburg, Pennsylvania. The disadvantages under which he labored, and the suffering to which he was subjected, in common with many other noble fellows who spilled their blood

freely at Gettysburg, as well as his present condition, &c., may be gathered from the following extracts of a letter received from him a few days since:

"I received no medical treatment from the time I was left (July 4th, near Salem,) more than an inexperienced nurse could give, until the 21st of July, when I was moved to Gettysburg, (which was nineteen days after the operation had been performed.) During all the time I used cold water applications alone. By the 1st of August I was able to sit up without assistance, and by the 15th could walk with ease. I steadily improved, and on the 10th of September was moved to Baltimore. Transportation very rough. On the 25th of September I was put aboard a steamer, in company with three hundred other badly wounded, all crowded on deck, exposed to cold night wind, thinly clad, and barely room to sit down. Thus I remained for three days, when I arrived in Richmond. Remained there from the 28th of September to the 8th of October. After my arrival home I was attacked with chills and fever, and as soon as they were stopped, my improvement was very rapid. Just six months from the time of the reception of my wound and the operation, I was entirely well. Nearly four inches of bone was taken from my arm, including the head, and yet I have perfect use of my hand and forearm. These functions not the least impaired. My arm is somewhat smaller, and shoulder slightly shrunk. I am now in enjoyment of almost perfect health, with every prospect of a long life." In another portion of his letter he says: "On the 15th of August I was visited by Dr. Jaynes, of Philadelphia, Surgeon-General of Pennsylvania, who examined my arm closely, and evinced much surprise that a rebel surgeon could perform a difficult operation so successfully." How notoriously consistent with Yankee character is the attempt of a Northern brother to defame the reputation and underrate the skill of Confederate surgeons, and that, too, by one Jaynes, a name most prominent of all others as having practised the most palpable absurdities and deceptions upon his fellow creatures by dispensing *secret nostrums*—mystery alone giving them value or importance, and implying the most disgraceful ignorance and fraudulent avarice.

ART. VI.—*The Effects of Minie Balls on Bone.* By E. LLOYD HOWARD, Surgeon 27th Reg't N. C. T., Cooke's Brigade, Army Northern Virginia.

Since the introduction of the Minie ball into warfare, surgical writers, with entire unanimity, have agreed that wounds of bony structures, inflicted by this missile, are characterized by extensive fissuring and comminution, such as was rarely, if ever seen, when the old smooth-bore musket was the weapon of the soldier. In every recent work on military surgery, we are told that the adoption of the improved weapon has "revolutionized" this branch of the science; and these writers would have us believe that this supposed extensive fissuring of bone is a new element, which should materially modify our prognosis and treatment of this class of injuries.

This doctrine I believe to be false in theory, and directly contrary to the teachings of experience.

The difference in the effects of the two balls depends upon their different rates of velocity; consequently, we should naturally expect that that missile having the greater degree of force, would cause the lesser splintering of bone—just as we see a bullet from a rifle pierce a pane of glass, leaving a clean, round orifice, without radiating fractures, while the same projectile thrown with less velocity, as from the hand, will shatter the glass into fragments.

In a late publication, "a Manual of Military Surgery," prepared for the use of the Confederate States Army, by order of the Surgeon-General, we find, in the chapter on gunshot wounds, the following passages:

"When a cannon ball, *at full speed*, strikes, in direct line, a part of the body, it carries away all before it. * * * If it be part of one of the extremities which is thus removed, the end remaining attached to the body presents a stump with nearly a level surface of darkly contused, almost pulpified tissues. * * * Minute particles of bone will be found among the soft tissues on one side, *but the portion of the shaft of the bone remaining in situ is probably entire.*" "In *ricochet-firing*, or in any case where the force of the cannon-shot is partly expended, the extremity, or portion of the trunk, may be equally carried away; but the laceration of the remaining parts of the body will be greater. The surface of the wound will be less; even muscles will be separated from each other and hang loosely, offering, at their divided ends, little appearance of vitality; spiculae of larger size will probably be found among them, *and the shaft may be found shattered and split far above the line of its transverse division.*"

This description of the difference in wounds, caused by balls at great and lesser velocity, is well drawn and true to nature. But, though admitting this difference in the case of cannon-balls, the writer alleges a directly opposite condition to exist in wounds from *musket balls*. At page 41 occurs the following: "A rifle bullet which splits up a long bone into many longitudinal fragments, inflicts a very much more serious injury than the ordinary fracture effected by the ball from the smooth-bore musket."

Why should not here, also, the projectile of more rapid flight produce the cleaner section, just as has been admitted to be the case with cannon-shot? It may be said that there are other points of difference between the two missiles than that of velocity—as the conical form, and the rotary motion of the Minie ball—two features wanting to that of the smooth-bore.

How the rotary motion could have any influence in producing the fissuring, is not apparent. The form of the conical ball gives it, it is asserted, the peculiar power of the wedge, and that it is by virtue of this power that it produces the supposed fissuring. That this wedge-like shape gives the ball easier passage through the air or other obstacles of slight molecular tenacity, which it may encounter in its flight, may be true. On meeting with an object of greater density and of fibrous structure, that the fibres should rather be sep-

arated in their length than torn across by such a missile, giving it passage through the rent, would seem a natural supposition, and such separation be apt to extend beyond the immediate point struck. But that such is not the fact in the case under consideration, experience abundantly proves.—When a conical ball strikes a plank, we find as little splitting of the wood as from a round ball; and here the fibrous character of the substance is far more marked than in the case of bone.

That this wedge power is not exercised, is partly due to the fact that immediately, on contact, the leaden missile is somewhat flattened out of its original shape, (even by substances of less density than its own,) but principally because *great velocity robs the wedge of its peculiar force, which is essentially slow in its action.*

Wounds from the smooth-bore musket are now but rarely seen by the army surgeon, but we often have presented to us injuries of a similar character from fragments of shell, balls from spherical case shot, and the rifle ball, whose force has been partly expended by distance, etc., and the similarity of this last to wounds from round balls is an additional argument, if any were needed, against the theory of wedge-action. In these cases I have almost invariably found more extensive comminution than in those where the limb has been pierced by the Minie ball in full flight.

Where you have a ball impacted in the shaft of a bone, you will generally find fissures extending for a considerable distance both upwards and downwards. I have frequently seen this in wounds from the round leaden ball, musket-size, from spherical case, whose velocity is seldom sufficient to carry it entirely through a limb.

On the other hand, where we have a limb pierced by the Minie ball, with the orifices of entrance and exit of the same size and appearance—which is an indication that the ball passed at great velocity, with unimpaired force, we may feel assured that a clean cut has been made through the bone, and that there is no great fissuring around the immediate vicinity of the point struck. In the large number of amputations and resections for wounds of this nature, which I have witnessed upon the different battle-fields, rarely, if ever, have I seen fissures extending along the shafts of the bone.

Both the Minie and round ball, in passing through a bone, destroy every thing in their paths; but the missile of the *lesser* velocity exerts its destructive influence over a *wider sphere around that path* than that of the *greater speed*, whose injurious effects are *confined to its immediate track*, just as I have before illustrated, in the case of the pane of glass.

Marriages of Consanguinity.—M. de Cricq-Cassaux, with a view to refute the arguments lately brought forward to prove the danger of marriages amongst relations, quoted at the last sitting of the Academy of Sciences the example of the ancient kings of Persia, who, since the time of Cambyses, had been in the habit of marrying their sisters, and even their daughters, and yet produce a very fine race.

G. S. Medical & Surgical Journal.

RICHMOND, JUNE, 1864.

AYRES & WADE.....PUBLISHERS AND PROPRIETORS.

Conservative Surgery in Compound Fracture of Femur.

The military surgeon has no question submitted to his discretion of more importance than to determine upon the propriety of amputation in compound fractures of the femur, the result of gun-shot wounds.

The authorities, both French and English, teach us not to trust these cases to nature, and broadly state that, in the operation alone, there is hope; but the statistics, particularly of the Crimean campaign and in our own service, prove that the mortality after amputation is enormous, and force us to consider the propriety of conservative practice in this numerous class of surgical accidents.

In various numbers of the Journal, the reader will find many interesting observations bearing upon this question, and we submit at this time a consolidated statement of compound fractures of femur treated without operation, compiled from the records in the Surgeon-General's office, from June, 1862, to Feb. 1, 1864, inclusive. We have, in this summary excluded all cases not positively determined, and hence, while the number of observations is greatly reduced, the value of the conclusion is increased in like proportions.

Total number of cases, 221—recovered, 116—52 per cent.

Average period of recovery, 104 days—greatest period, 255 days, and least, 41 days. Average period where death occurred, 52 days—greatest period, 185 days—least, one day. Average amount of shortening, 1 9-10ths inches—greatest, 5 inches, and least, half an inch.

When we compare directly the results of amputations with the table of cases not operated on, we feel still more disposed to rebel against the authority of Guthrie, McLeod, Larrey, Percy and Dupuytren, and at least hesitate before condemning the shattered limb to instant ablation. Our own statistics are as follows:

507 cases amputated—250 recovered—50 per cent.

221 cases *not* amputated—116 recovered—52 per cent.

The chance for life being more than equal, the value of the leg saved should be considered, and the table throws important light on this point—the average shortening is less than *two inches*.

Submit these facts to an intelligent soldier—"your thigh is broken by the ball—your chances of life are even whether amputation is performed or not—without the operation, if you live, you will suffer an average of 104 days—if you die, it will take 52 days—and when you recover, you will have a leg two inches shorter than the other." It is easy to imagine his reply to this simple statement of the facts—"Give me a chance for life and limb."

The very important remarks on this subject from the most

recent French authority on military surgery, published in the chronicle for this number, corroborate forcibly the position which is assumed in this article. The reader's careful attention is called to this interesting translation, but for the sake of condensation, we groupe his statistics with those collected from various sources during the war.

Legouest.

1,664 cases amputated—recovered, 123—7 per cent.

337 cases not amputated—recovered 117—31 per cent.

Chimborazo Hospital Statistics—first and second numbers of this Journal.

31 cases not amputated—recovered, 19—61 per cent.

These observations bring us to conclude, that whenever, in compound fracture of femur, the result of gun-shot-wound, there is a doubt as to the propriety of amputation, that we give the leg the benefit of the doubt—the chances of life being at least equal, and the value of the limb, after recovery, being worth the effort to save it.

TRANSACTIONS OF ASSOCIATION OF ARMY AND NAVY SURGEONS.

Association of Army and Navy Surgeons, March 26, 1864.

Surgeon-General S. P. MOORE, President, called the meeting to order at 8 P. M.

The minutes were read and approved. A letter was read from Dr. J. A. Cunningham accepting the election as honorary member of the Association, and expressing his thanks for the honor conferred. Letters were also read from Surgeons Jno. A. Hunter, Medical Director, A. N. V., W. B. Harréll, P. G. Robinson, C. H. Ladd, W. M. Wilson, W. F. Richardson, and E. B. Haywood, on the subject of tetanus.

Surgeon CHAMBLISS exhibited a pathological specimen of interest, consisting of two aneurismal tumors, resulting from gun-shot injury to the deep-seated-femoral artery.

The question before the association relating to idiopathic tetanus was read.

Surgeon MICHEL remarked that there appeared to have been no development of idiopathic tetanus from the atmospheric exposure through which our armies had passed. Notwithstanding the insufficiency of these influences in engendering this form of the disease, traumatic tetanus had prevailed to some extent. When originating from alternating degrees of heat, cold and moisture, he believed the disease was a *centric* disturbance. The traumatic variety was perhaps *eccentric*, at least, when some nerve sustained injury. Tetanus, after parturition, was possibly traumatic, for during this physiological act the uterus undergoes a complete exfoliation of its mucous surface. A vast surface entirely denuded of its investing membrane, presents a lesion readily productive of danger. The spontaneous development of tetanus is so rare that many denied the occurrence, so prone are we to impute this disease to some occult or ill-defined lesion of a nerve. There was no doubt, however, of its occurrence without any lesion. It had been ascribed to injury produced by worms, which he did not believe probable. Any of these forms or varieties he was disposed to regard as indicative of a blood disease. A dyscrasial condition of the blood was adequate to the production of such symptoms, and certainly accounted

more satisfactorily for their vehemence and the fatal issue, even in traumatic cases, in which so seldom any appreciable lesion is discoverable. This view of the pathology of tetanus was not new; it is entertained by high authority, both Todd and Travers had advanced the doctrine that some poisoned state of the blood probably existed. One of these pathologists in search for the specific cause resorted to a test similar to that performed by Marshall Hall for the detection of strychnine. M. Hall having detected the thousandth part of a grain of strychnine, by immersing a frog in a prepared solution of the poison, rendering it thereby *tetanic*, or as he termed it, *strychnoscopic*. Dr. Travers endeavored to induce tetanoid symptoms in the same animal by subjecting it to prolonged contact with a concentrated solution prepared from the blood and effete products of the wound of a tetanic patient, without, however, any decisive result. Though unsuccessful in this single experiment, it was worthy of repetition under the favorable opportunities now presenting themselves.

Surgeon SPENCE said he had known of the disease being brought on from simple exposure, and he would relate the case: In September, 1852, a servant was engaged in gathering fodder until late at night, when the patient fell accidentally asleep, being exposed all night in the open air. In this case no marks of injury of any kind could be discovered. The case recovered, after lasting sixteen or eighteen days. Resorted to cauterization of the whole spine, administering morphine, stimulants and nourishment. There was trismus well developed in this case.

Surgeon C. B. GIBSON observed that though he did not consider it of practical importance to discuss whether there was such a disease as idiopathic tetanus, yet he declared his disbelief in the existence of any such affection. Tetanus, he thought, was always of traumatic origin, the failure to discover the lesion in particular cases was no contradiction of its existence, for it might be concealed in situations not examined. An infinite series of causes might produce imperceptible injuries of nerves sufficient to induce an attack, since the simplest scratch is known to be sufficient. A case was on record of a servant who died in fifteen minutes from a small scratch, the result of the breaking of a dinner-plate. It was not improbable that some foreign body in the rectum, or even hardened faeces, might produce laceration of the mucous membrane during defecation. This would be enough to establish at once a sufficient cause. Some writers had denied the existence of idiopathic tetanus, and he was disposed to agree with them. Tetanus, after confinement, was obviously traumatic, not so much on account of the exfoliation of the uterine mucous membrane, which might be considered a physiological condition, as the accidental lacerations about the neck of the womb. Dr. G. said it was far more important to arrive at some conclusion as to the most efficient mode of treating this affection; he considered the remedies applicable to, and not the kind of tetanus as important. Patients died and recovered under all kinds of treatment. He would recommend some agreement, if possible, among the profession, as the most approved of methods of cure.

Surgeon SPENCE thought that the use of chloroform, both internally and externally, was always called for in combination with some stimulant. He had seen this plan prove serviceable, even in a horse. The animal had trismus, though no wound was discoverable, and by the active use of chloroform, two ounces of which were administered in one pint of whiskey, while inhalation was persevered in, the horse recovered.

Surgeon MICHEL said that after the discovery of anaesthetics, great hopes were entertained as to the successful treatment of tetanus by their use, but, unfortunately, experience had not realized these expectations. Where spasms were controlled, or even entirely ceased during their administration,

patients died apparently from nervous exhaustion, which circumstance confirmed the belief in some blood cases. Anæsthesia was, however, clearly indicated, and in this connection a curious fact was stated by Dr. Snow, of England, who had devoted so much study to the use of anæsthetics, that as far back as thirty-five or forty years ago a case of tetanus was reported to have been cured by the inhalation of sulphuric ether. In reply to his friend, Professor Gibson, he would remark that the onus of proof must rest with those who denied the idiopathic origin of the affection. The lesion, however slight, must really be found to exist. If we are to admit the most inconspicuous peripheral abrasion as an all-sufficient cause of such speedily deadly consequences, it might well be asked why was tetanus so very rare an accident in any of its forms? why was it not met with constantly and everywhere? For his part, he saw no relation whatsoever between the extent of the injury and the vehemence and fatality of the results—no interdependence of cause and effect. Besides, the concurrent testimony of many writers shows that climate so far influences the development of this malady, that it is comparatively frequent, if not of endemic prevalence in certain latitudes. At least one form of it—*trismus nascentium*—is so common in India as to destroy one half the infants who are born in those regions. Here some idiopathic cause must obtain; for though it was customary to refer *lock-jaw* to injury of the cord, this he never admitted, for the cord had no nerves. The potency of climatic influence, in producing spontaneous development of spasms, was shown in the interesting fact stated by Dr. Kane in his Arctic Expedition, where he observed that all of his dogs and some of his men were seized with tetanoid spasms, of which they all died. Dr. M. said if he had referred puerperal tetanus to the *moulting* of the uterine surface, it was to show that so considerable a breach of surface, though a physiological act, might produce changes in the blood. Not only was the neck of the womb fissured, but there was always laceration of the posterior commissure of the vulva—the *fourchette*. There was practical utility in the inquiry into the probable causes and differences of these forms of the disease. How are we to apply curative means if we know nothing of the pathogeny of the affection? If it be dependant always upon injury to a nerve, we must amputate or cut around the nerve; if to change in the blood, iron, quinine, wine, etc., should be used, which latter treatment, of late, seemed to prove more successful.

Surgeon GIBSON replied that nothing better exemplified the inconclusiveness of the argument in favor of the idiopathic nature of tetanus, based upon apparent absence of any lesion, than the ascertained history of certain cases of hydrophobia—a disease known to depend upon introduction into the blood of a virus derived from a rabid animal—in which cases hydrophobia had apparently arisen spontaneously. A woman died of what was called *idiopathic hydrophobia*—for it was positively ascertained that she had never been bitten by any dog, but it was afterwards discovered that she had used, in some way, a rope which had served to confine a rabid dog. Here it was evident the virus which can remain so long dormant in the system at times, must have lain latent in the coils of the rope, and must have come in contact with some abraded surface. Another woman had hydrophobia from the scratch of a cat's claw. Such instances showed how difficult it was sometimes to trace each link in the chain of causation, and these examples strengthened his belief in the non-existence of idiopathic tetanus. He differed as to there being no nerves in the cord; the blood-vessels of the cord must be accompanied by nerves, for these are found everywhere along the coats of the vessels.

Surgeon MICHEL begged permission to reply to Prof. G.'s last remark. The umbilical cord and placenta, constructed

to subserve a temporary purpose and disappear as relicts of foetal structure, were, under such a plan, unprovided with those elements of organization possessed by permanent organs. There were not only no nerves, but also no lymphatics in either cord or placenta. The evolution of these parts in the embryo explained the reason of this exception. How were these parts formed?—the allantois was a provisional structure, only designed to convey vessels to the surface of the chorion, and through its villousities to the mucous membrane of the womb, thereby establishing an ovo-uterine connection. During this stage, the amnion folds around it, and the vitelline sac with its omphalo-mesenteric vessels, which structure soon entirely disappears, while the pedicle of the allantois contracting into the urachus retains only these embryonal vessels surrounded by the gelatin of Wharton. Therefore, as a needless expenditure of structure, no filaments of the sympathetic nerves nor sympathies were traceable along the vessels of the cord, nor their convoluted capillaries which form a placenta.

Surgeon BREWER saw, when a student, a case of tetanus which was supposed to be idiopathic, but on proceeding to make the *post-mortem* examination, it was discovered that the subject had worn a moxa for some time. Believing, that like insanity with regard to the brain, so in tetanus in relation to the spinal cord, there existed a predisposition or constitutional proclivity to the disease. The negro was more disposed to tetanus, perhaps, from a greater nervous susceptibility, together with being more exposed and less warmly and comfortably clad. He had seen spasms brought on by the use of liquors—whiskey spasms, as they were called. In treatment, we do little but assist nature and allow the disease to wear itself out. In cases reported cured by chloroform, it was doubtful whether the chloroform cured or only assisted nature.

Surgeon McCaw considered the term *idiopathic* tetanus one which should be banished from our nomenclature, as he did not see how the same disease could exist in two forms so different in their results, as to prove invariably fatal at one time, and almost always end in recovery at another. What was described as idiopathic tetanus, seldom terminated in death, while traumatic tetanus was always fatal. He thought two very different conditions existed in these affections described as identical. True tetanus was always of traumatic origin. But when we speak of idiopathic spasms, reference is made to a blood disease. The spasms arising from strychnine, are clearly due to the introduction of that poison into the circulation. In whiskey spasms, an excess of carbonic acid in the blood is produced by the introduction of *fusel oil* into that fluid. While, again, in the spasms described by Dr. Kane, the phenomenon was due to the retention of carbonic acid in the blood, owing to the absence of light. Under all such instances, therefore, the blood is at fault. Possibly, in so-called idiopathic tetanus, some change occurs in the blood, not from extremes of heat or cold, but from *sudden alternations* of temperature. In certain latitudes, such morbid manifestations were more frequent than in milder or more regular climates, and these influences of temperature were exerted in developing even true tetanus; hence, lock-jaw destroys more infants in one part of the world than in another. He believed this infantile disease to be essentially traumatic, depending upon the lesion about the navel, resulting from the sloughing of the cord, as it generally comes on about the ninth day.

Cold-Water Dressings. By Surgeon J. B. READ.

Surgeon READ read a report on cold-water dressings, embodying the statements and opinions of the many surgeons who had replied to inquiries on this subject.

The reporter referred to the three ways in which this agent was generally applied in hospital and private practice, by cloths or lint wet with cold water; by irrigation or *guttatim*; and by wetted cloths, covered with a greased rag or oiled silk to prevent evaporation, or still more elegantly by the application of wet spongio piline. This last method of using cold water, converts it gradually into a warm-water dressing. The effect contemplated by the use of this agent is reduction of temperature, and sedation. This result is obtained by the direct constringing power of cold, which renders latent the abnormal quantity of caloric incident upon the increased flow of blood in the part, and by the evaporation caused by this increased heat, and the constant currents of air. To produce this result, cold water must be continuously applied and for a length of time corresponding to the strength of the patient, and the local hypercemia that obtains. The benefit of the treatment consists in not using it too soon or too long; but only in modifying and restraining the inflammatory process.

Cold, in constricting the capillaries, drives the blood from the surface, to which it immediately returns, if it be discontinued, with increased force, producing a glow both pleasant and healthful. The same effect occurs if cold water be intermittently used, at intervals long enough to permit of its evaporating, and of the drying of the parts. By this method much inconvenience, and by its persistence even fatal injury, may ensue. The constant change from depression to excitement in the capillaries, produced by the reflux and flux of blood, ends in stagnation of the blood in the part, or may proceed to an extent in which the death of the tissue will ensue. A certain amount of inflammation must be present in order that the wound may progress favorably, and it is in modifying and measuring this action that cold water applications are especially useful, for repair of the parts may be prevented by too great, and delayed by too little, action. After receipt of a wound, it is more than probable that there is a stasis of the blood in the vessels for some little distance from it, which lasts for several days. This varies with the tissue, and says Paget: "This may be the brooding time either for good or evil." Now, this condition of the injured part is surely to be taken into consideration in the use of our applications to the wound. Nature, shocked by the injury, thus guards herself from more serious consequences, stays pressing and immediate danger of hemorrhage by producing stagnation, and resting quietly, gathers her forces slowly and temperately, for the repair of the injury done; and much of the perfection of this effort depends on her being left quietly to work out the result in her own way. The point of practical importance is to distinguish accurately, when this stasis ceases and inflammation sets in, for this is the time for the continuous use of the agent. Men worn out by excessive excitement, badly fed and hardly overtaken by long marches and sleepless nights, dispirited or demoralized by defeat, cannot be in the same condition, as regards the healing of their wounds, as those who are well fed, who have suitable repose and are elated by the enthusiasm of victory. In the one case all depressing agents should be studiously avoided, until, at least, they are imperiously called for; in the other case, these would be of use at a much earlier period. This effect of the condition of the patient's system, was brought forcibly to mind after the seven days' battles around this city. In the hospital under our charge all wounds were treated with cold-water dressings, and such was the assiduity of the ladies, who at that time volunteered their aid so kindly, that the wounds were kept constantly drenched. The result was that the suppurative process was much delayed, and the necessary separation of the injured parts postponed to such a degree, that cold water as a constant application had to be discontinued; for from this indiscriminate

drenching there was much greater destruction of tissue than we have since seen under a less vigorous treatment.

Wounds in some situations and of certain characters respond differently to a cold-water treatment. Wounds of the face, and those penetrating the cranial cavity, do well with cold-water dressings; while its use, in wounds penetrating the abdominal and thoracic cavities, is hardly compatible with sound judgment. The law that governs the lesser and greater fatality of amputations in the extremities, seems to obtain also in the use of cold water. It appears questionable, also, whether, in gun-shot wounds passing through large surfaces and great depths of muscles, cold water should be continuously applied. Its action, where the wound is superficial in its extent, is easily appreciated, but it cannot be equally efficient when applied to a deep wound, as it is separated from the greater part of the injured textures by intervening muscular masses, its repellent effect increasing congestion in the deeper portions of the track.

The demand for its use in wounds of joints is imperative; synovitis, the ingress of air into the sac; and all the train of evil consequences call for the advantageous use of cold-water *guttatim*. Cold and chilliness always indicate the suspension of the agent. There are cases, however, irrespective of any such sensations, in which these dressings should be changed, and when the granulations become pale and flabby, assuming a greasy look, with a doughy feel of the surrounding tissues, the general practice has been to discontinue cold dressings after the establishment of suppuration, but should no unpleasant chilliness or deleterious effects be experienced, these may, even throughout this stage, be continued with the effect of controlling the discharges and keeping the wound clean. This treatment, however, is perhaps inapplicable to extensive shell wounds, in which large lacerated surfaces are exposed. The depressing effects are such as to retard the sloughing process, which is often rendered troublesome and excessive.

The method of covering the wetted cloths with oiled silk or a greased rag is of general utility, as it places wounds in the condition most essential for their well doing, and fairly shields them from the injurious effects of the air. The parts are kept moist and soft, and the hardening of effused blood is prevented, relaxation of the capillaries is induced and we realize the advantages derived from a warm bath. We are of opinion, that, in the majority of cases of compound comminuted fractures, as also in penetrating wounds of the thorax and abdominal cavities, it is the only mode of application admissible. From the perusal of the documents before us, we have learned of no injurious effects from the cold-water treatment when properly used. Neither gangrene, (sloughing phagedæna), nor erysipelas has resulted. The transient vesicular or papular eruption produced by such dressings is too evanescent to be termed an injury. Scrupulous care should be paid to cleanliness, by each patient using his own basin and sponges while resorting to this mode of treatment. The cloths previously used should be burned where gangrene has prevailed to any extent.

We submit therefore:

That cold water is invaluable in the treatment of gun-shot wounds. That it may be used in three ways—by direct application, dripping, and by applications covered so as to prevent evaporation and exclude air. That each of these methods has its especial good, according to the condition of the wound and the part of the body injured. That the first methods are not as generally applicable as the third, and should only be used in specific cases to produce certain effects, and that as soon as these effects are produced, they should be discontinued. The third method is of most general utility, and in order that the proper result may not be interfered with, the application should not be made oftener than three or four times in twenty-four hours.

CHRONICLE OF MEDICAL SCIENCE.

ART. I.—*Conservative Surgery in Compound Fracture of Femur (Gun-Shot Wounds).* By M. LEGOUËST. (*Chirurgie Militaire*, 1863)

All fractures of the thigh, resulting from gun-shot wounds, have, for a long time, been considered, by the greater number of surgeons, as imperatively demanding amputation of the limb. Ribes* laid this down as an absolute rule, and his opinion, strengthened by that of Ravaton, Percy, Larrey, Dupuytren, Béguin Bandens, etc., acquired the force of law in military surgery, even while some of the illustrious surgeons just mentioned had happily departed from the principle established by themselves. Nevertheless, Fournier-Pescay,† contemporary of Ribes, wrote in 1813: "During the present epoch of military surgery, fractures of the middle of the thigh caused by fire-arms have been cured. J. L. Petit had never seen a case cured; amputation being always performed under such circumstances. The author of this article has cured five, three of which occurred at the military hospital of Brussels, in 1794. He had, previously to that time, attended General Schinner who was perfectly cured." Ribes himself, returning to the Invalides after the campaigns of Russia and Saxony, was greatly astonished to see arrive at the hospital, from 1814 to 1822 seven soldiers who had had fracture of the middle of the thigh, and who had gotten well without amputation. Isolated facts, observed in campaigning—others, more numerous, gathered during our civil discords—had already shaken the conviction of surgeons, when Malgaigne boldly declared before the Academy of Medicine‡ that he repudiated, for his part, the doctrine of amputation, and that, adding his own experience to that of others, he had concluded to try and save the limbs.

The contradictory assertions touching this subject demand new investigations; since when Hutin § one of the successors of Ribes at the Hôtel des Invalides, resumed the investigations to which this surgeon had devoted himself; and the author of this book|| has ascertained what had been the relative cures of fractures of the thigh treated, on the one hand, by amputation, and on the other, by conservation of the limb, during the campaign of the East.

Hutin found at the Hôtel des Invalides, from 1847 to 1853, a large number of the old soldiers who had comminuted fractures from gun-shot wounds and who had not been amputated:

Had had the femur fractured—	
In the lower fifth,	10
In the lower third,	8
In the middle third, below the centre,	1
At the centre,	20
In the middle third, above the centre,	7
In the upper third,	7
In the upper fourth,	6
Through the neck or the trochanters,	4
Total,	63
Giving—	
Fractures below the middle third,	18
Fractures within the middle third,	23
Fractures above the middle third,	17
Total,	63

* Gazette Médicale de Paris, 1831, p. 101.

† Dictionnaire des Sciences Médicales, art. Chirurgie Militaire, p. 101.

‡ Des Plaies d'Armes à feu, séance du 8 Mars, 1848: Paris, 1849.

§ Mémoires de Médecine, de Chirurgie et de Pharmacie Militaires, 1854.

|| Archives Générales de Médecine, t. xiii, 5e série, 1859.

Or in other words—

Fractures in the centre of the femur,	20
Fractures below the centre,	19
Fractures above the centre,	24
Total,	63

The fractures situated at the centre and below the centre of the femur constitute a little less than a third each of the total number of fractures of the thigh; and the fractures situated above the centre, a little more than a third of this number.

At the same time, there were 21 invalides with amputations of the thigh—

For comminuted fracture of the lower fifth of the femur,	10
For comminuted fracture of the lower third,	6
For comminuted fracture of the centre,	5
Total,	21

There was then no case of amputation of the thigh for fracture by fire-arms above the centre of the femur. This peculiarity, if not accidental, which it is difficult to admit, is probably due to the fact that the amputations performed high up on the thigh were followed by death. These figures show, that out of 84 fractures of the thigh from gun-shot wounds existing at the Invalides, from 1847 to 1853—63 (that is to say, three-fourths) had been treated without amputation, and 21, or the fourth, by amputation; but this approximation is not comparative, and does not give the proportion in which cases of fracture of the thigh followed by amputation or not were cured.

Our investigations concerning amputations of the thigh, consequent upon gun-shot wounds, have taught us that, during the campaign of the East, 1,664 soldiers* were amputated in the thigh

* These investigations are based upon the still unedited documents which Doctor Chenu has kindly placed at our disposition, and which were borrowed from the archives of the war office.

The number of 1,664 amputations of the thigh and of 123 cures have been established by M. Chenu in his work, which dates from the year 1859. Since this time, M. Chenu has made other investigations and gleaned new documents, which carry the number of amputations of the thigh to 1,678; those dying from the operation to 1,544, and those pensioned to 134.

Those cured were amputated—

In the upper third,	27
In the middle third,	25
In the lower third,	42
Point not indicated,	40
Total,	134

The number of fractures of the thigh has not been modified by the additional labors of M. Chenu; it remains at 337; that of the cures at 117, and that of the deaths at 220. The height of the seat of fractures, which was not indicated at first, is noted in the following manner:

	COMMINUTED.		NOT INDICATED.		GENERAL TOTAL.
	Pensions.	Deaths.	Pensions.	Deaths.	
Neck of the femur,	—	2	7	8	17
Trochanters,	—	2	3	2	7
Upper third,	14	15	4	15	43
Middle third,	5	4	17	17	43
Lower third,	14	6	16	10	46
Point not indicated,	6	21	31	118	176
	39	50	78	170	
	89		248		
	337				

These new figures only make a trifling variation in the general results of the work, which we have presented upon this subject, in the Archives Générales de Médecine, t. xiii, 5e série, p. 203.

for different lesions of the lower extremity, including therein the fractures of the femur, while 337 soldiers, having fracture of the thigh, had been treated upon the conservative plan.

Of the 1,664 amputated, 123 were cured,
" " " 1,541 died.

Total, . . . 1,664

The 337 cases of fracture of the thigh, treated without amputation, give—

Cures, 117
Deaths, 220
Total, 337

There is one striking fact in the results of amputation of the thigh, whatever may have been the cause, compared with those of fracture of the femur treated without amputation, it is that amputations of the thigh give five times fewer cures than non-amputated fractures of the thigh. It is very supposable, that if the 1,664 amputations of the thigh had all been operated upon for fractures of the femur, their chances of death or recovery would have been the same. In accepting this supposition, the result of our labors would be, that, in the army of the East, the chances of success for amputations has been—

For the upper third, . . . 6 per 100
For the middle third, . . . 6 per 100
For the lower third, . . . 10 per 100

While the chances for recovery without amputation of fractures have been—

For the upper third, . . . 31.5 per 100
For the middle third, . . . 31.75 per 100
For the lower third, . . . 42 per 100.

We do not attribute an absolute value to these figures, but we believe, however, that they enable us to establish an approximative relation of the success of the treatment of fractures of the thigh without amputation to that of the treatment of fractures of the thigh by amputation. This relation is—

For the upper third of the femur, as 31.5 is to 6.
For the middle third of the femur, as 31.75 is to 6.
For the lower third of the femur, as 42 is to 10.

In a general sense, the proportion of the total, 177 survivors out of 337 wounded not amputated, is 35 per cent.; that of the total, 123 survivors out of 1,664 wounded amputated, is 7 4-10ths per cent. The relation of the totals is as 35 is to 7 4-10ths; in other words, in the Crimean war, the men treated for fractures of the thigh, by the conservative plan, got well in a proportion nearly five times greater than those treated, by amputation of the thigh, for traumatic lesions of every character of the lower extremity.

ART. II.—On the Therapeutic Properties of Carbolic Acid. By GRACE CALVERT, PH. D. F. R. S.

I deem it my duty to draw the attention of the medical profession to the valuable therapeutic properties of carbolic acid, which I have during the last two years brought under the notice of some of the leading medical practitioners of Manchester and London.—Before giving particulars of the chief applications of this substance which have been made by these gentlemen, I will first state what carbolic acid really is.

Carbolic acid, hydrated oxide of phenyle, or phenic acid, is a white substance, which crystallizes in long prisms, fusibly at 93° Fahr., and boiling at 370°. It has a slight tarry and aromatic smell, resembling that of wood creosote, and is freely soluble in

alcohol, ether, and glycerine, partially so in glacial acetic acid, and only slightly so in water, of which 100 parts will dissolve only three parts of carbolic acid. It is easily prepared by treating the oils of tar, which distil between 350° and 400°, with caustic lye, removing the caustic lye solution from the neutral oils, and adding hydrochloric acid to the alkaline solution, when the carbolic acid is liberated, and rises to the surface as an oily fluid, from which, by distillation, the above mentioned therapeutic agent is obtained.

My friend and colleague, Thomas Turner, Esq., F. R. C. S., and Senior Surgeon at the Manchester Royal Infirmary, read, at the last meeting of the Lancashire and Cheshire Branch of the British Medical Association a lengthy paper "On the Uses of Carbolic Acid as a Remedial Agent," from which I extract the following:

"In cases of relaxation of the mucous surfaces, the solution of carbolic acid in glycerine, applied by means of a bush or sponge, is most beneficial. Thus its use is indicated in polypi of the nostrils, as well as ozæna, and in all putrid discharges from the mouth, throat, nostrils, ears, rectum, and vagina.

"I shall next call your attention to the use of carbolic acid in diphtheria, in which disease it is a most valuable remedy used topically to the throat. * * * To apply it I use a sponge mop, which should be used freely, but not saturated, lest a drop should fall into the larynx. The escharotic effect of carbolic acid is confined to the surface to which it is applied, there being no spreading to the contiguous parts, which may happen in the case of nitric acid. The aqueous solution of carbolic acid may be also used as a gargle.

"Ulcers—I apply carbolic acid in different degrees of solution, according to the character of the sore, to carbuncle and ill-conditioned sores.

"Fistulae.—I apply it by means of a wax taper used in lighting gas, or, if the size of the fistula will admit of it, I use a catgut or wax bougie, taking care to carry it to the bottom of the fistula. I have never succeeded in anal fistula where there is a communication with the gut. In these cases an operation is still necessary.

"Hæmorrhoids.—The action of carbolic acid is mainly to corrugate, and therefore to obliterate, the sac of the pile. It coagulates the contents, which may be squeezed out; and by corrugation it empties the pile, by which the two surfaces are brought into contact, and thus the sac is obliterated."

Mr. Oscar Clayton states that in two cases of fetor of breath, arising from a diseased state of the mucous membrane covering the tonsils, he applied to the parts a mixture of equal proportions of glycerine and carbolic acid, and with perfect success.

Mr. Cambell De Morgan has also applied the glycerine solution of carbolic acid with success to several cases of lupus.

Dr. James Whitehead, of Manchester, prefers treating this disease (lupus) with an ointment made of half a drachm of carbolic acid to one ounce of spermaceti ointment.

Mr. Oscar Clayton has also successfully employed the aqueous solution to several skin diseases—viz, lepra, tinea capitis, rupia, &c.

Dr. Roberts and other medical men have employed carbolic acid with advantage internally for dyspepsia and other derangements of digestion.

Dr. Pattison, of St. John's Wood, writes me as follows:

"I have prescribed your carbolic acid in several cases of fungoid disease during the last nine months with marked success. In three cases of fungus hæmatodes in which I employed it, the disease in all was checked in a remarkable manner. A thick crust was speedily formed on the ulcerated and bleeding surfaces, the exhausting discharges were completely arrested, and in one case there was great diminution in the size of the fungous mass. Your carbolic acid is almost a specific in cases of anthrax."

I also think it well to insert the following remarks from Dr. Thomas Hughes, M. R. C. S., F. S. A., London:—"Sir: I have used Dr. Calvert's carbolic acid as an external application in cases

of sloughing wounds with the most marvellous effect; and in no case was its effect more strikingly manifest than in the case of Rogers, one of your miners, who received such a contusion of the hand as to destroy the arteries leading to the index and little fingers; and, in spite of every effort made to restore the circulation in the fingers, sloughing took place, and which appeared to spread and extend to the hand and arm with such rapidity that if it had not been for the timely application of the carbolic acid the man would have lost his arm from the most destructive sloughing I ever witnessed. The effect of carbolic acid was so decidedly marked as to leave no doubt of its wonderful effects in checking the spreading of sloughing, and in accelerating the separation of slough. It seemed also to have the effect of promoting the growth of granulations, and hastening the healing of the wounds. I have used carbolic acid in several other cases with the same happy effect."

"Amherst, Aug. 29, 1863."

I have found it very successful in one or two cases of intestinal worms, given in doses of a teaspoonful of the aqueous solution in a tumbler of water, morning and evening. I have also applied the water solution externally with perfect success in several cases of spora.

Two eminent French physiologists, MM. Gratiolet and Lemaire, have published a most interesting paper on the Action of Carbolic Acid in arresting Putrefaction; and they have made the important observation that, whilst it does not interfere with chemical fermentations, such as the conversion of amygdaline into hydruret of benzoile, and the conversion of myronic acid by myrosyne, it completely arrests all vegetable and animal fermentations which arises from cryptogamic life. They have also observed that when carbolic acid is mixed with the vaccine virus, it entirely prevents its peculiar action upon animal organization.

These valuable observations of MM. Gratiolet and Lemaire strongly impress me with the idea that the use of carbolic acid might prove of great advantage in the early stages of consumption, if applied in the following manner—viz: by making the patient frequently inhale the vapor of the acid by means of an inhaler containing some cotton-wool saturated with the acid so that the inspired air must pass through the wool. I would at the same time administer a teaspoonful of the aqueous solution mixed with two ounces of pepper-mint water three times a day. I think also that the same treatment might be advantageously tried in cases of scarlatina and typhoid fever, with the addition of saturating the air of the chamber as far as possible with the vapor, by placing lint or wool steeped in carbolic acid in various parts of the room. I would also administer once a day an enema consisting of a weak solution of carbolic acid.

Royal Institution, Manchester, 1864.

ART. III.—*Records of Cases Treated in St. Bartholomew's Hospital.* By FREDERICK C. SKEY, Esq., F. R. S., President of the Royal College of Surgeons, and Surgeon to the Hospital.

In the following paper I propose to take in review some of the more prominent cases that have occupied in my wards in St. Bartholomew's Hospital during the past year. Cases are prominent in a ratio with the interest they raise in the professional mind, and with the amount of instruction obtainable from the study and observation they require. It is the great privilege of the hospital physician or surgeon to revel in multitudes of cases, presenting to his daily increasing experience the almost endless varieties of disease and injury. Endless, indeed, they may be termed; so nume-

rous, so original, so eccentric, that the largest experience can never entirely overtake or expound them. But while a large aggregate of cases furnishes the best and indeed the only real source of correct diagnosis, it by no means necessarily infers the treatment to be equally sound. The mental powers which are called into requisition for the purpose of determining the nature of a disease—memory, comparison, &c., are exerted with far less force in the selection of treatment. There is but one diagnosis, as there is but one truth; whereas there are varieties in treatment, which spring from early adopted principles, and though engrained in the daily practice of the individual surgeon, may vary largely in the aggregate body of professional men. There are probably no two hospitals in London in which the treatment of the same case would be exactly similar, and in most would differ widely from that adopted in others. Indeed, it is not necessary to carry our investigation beyond the walls of any one institution to observe a diversity of opinion and practice in the province of therapeutics. These opinions cannot all be right, because they are often almost in antagonism. It would be a wholesome condition exacted by the governors of hospitals, that which would require its medical staff to visit similar institutions, under the charge of other hospital officers, to take yearly stock, as it were, of cases, to compare notes, and to extract all available knowledge, whether medicinal or mechanical, adopted in the practice of others. As the case now stands, however, we are all so well content with the correctness of our own views and actions, that I fear the time has scarcely arrived for the adoption of so salutary a practice. The publication of examples of rare or otherwise interesting diseases occurring in the practice of hospitals is an imperative duty of an hospital staff. They belong to the profession, and not to the individual, and he is bound by his allegiance to his profession to give them publicity. Acting in this spirit, I proceed to record such cases of interest, with their treatment, that have come under my observation in St. Bartholomew's Hospital mostly within the year, and on many, perhaps on most, I shall make observations which, failing any better description, may bear that of "clinical."

Varicose Veins.

Of cases of varicose veins of the leg every hospital furnishes abundant examples. Whether or not coupled with what is loosely denominated a varicose ulcer, they are often a source of much evil to the subject of them. They are the cause of both weakness and pain. They incapacitate for hard work. But they do not exist alone. Their presence marks a constitution; it is the constitution of debility—a deficiency of power in the acting organs of the circulation. The treatment involves two objects: 1st, the increase of power to these organs; and 2d, the turning the current of the venous circulation into healthier channels. The first is affected by the liberal administration of nutritive-stimulants. The second object has tested the invented faculties of many surgeons. I leave it to others to commend the various schemes adopted by them. I discountenance, from long observation of its incompetency to cure, the employment of the needle, whether through the vein or under it, single or double. It has these objections: 1st, it is not unattended with danger; and 2d, it fails to obliterate the vein, except at the point of its application, mainly because the applications cannot be safely made in numbers proportionate to that of the veins affected. I have at present in St. Bartholomew's Hospital a woman under treatment for varicose veins of the leg, whose limb was jeopardized by the employment of the needle a year ago. A long illness, with severe inflammation and extensive abscesses, followed. The same limb is again under treatment for the original disease. There is no danger in making any number of small eschars on the most projecting surfaces of varicose veins, if made with an escharotic composed of two-fifths of pure potash and three-fifths of powdered lime. This powder, well combined, is made into a paste with alcohol. Whether other escharotics are dangerous in their operation

on veins I do not stop to inquire; I only know that the Vienna paste, combined as I have above described it, is not. These eschars may be made in any number proportionate to the extent of the disease. I have treated perhaps 250 cases in the course of the last ten years, and I continue to treat them by the same means. The paste is applied over the most projecting parts of the vein in the following manner: through a series of about four layers of adhesive plaster a circle is cut of the size of a threepenny piece or smaller. The influence of the escharotic extends through the vein and it is curious to observe that from the hour of its application the entire vein appears to be obliterated, and is undetectable to the finger on pressure. From ten to twenty-five eschars may be applied between the ankle and the knee. Twenty minutes suffice for the full operation of the escharotic, and an average of one month for the cure. In very weak constitutions the ulcers will heal very slowly, unless well directed efforts be made to give force to the general system.

[TO BE CONTINUED.]

ART. IV.—*The Natural Progress of Disease.* By JOHN HUGHES BENNET, M. D., Edin., F. R. D. E.

It may be laid down as a general law, that diseases are seldom stationary, and that their tendency is to get better or to get worse. While many disorders, from their trifling character, or in consequence of being well known, are at once recognized as capable of disappearing spontaneously, others have been supposed actually to have a destructive or injurious tendency, or to be necessarily fatal. Now the study of disease in modern times has led to a great change in our views on these heads. For example, it was formerly supposed that acute inflammations had, for the most part, a destructive tendency; that suppuration was a great evil, and always required the interference of the surgeon, because an abscess, if so deep-seated that it could not be reached with the knife, seldom got well, and if it burst into an internal cavity, caused death. Again, if inflammation visited the skin, the mucous or serous membranes, or the internal organs, the great object was to prevent it spreading by using the most violent remedies, such as bloodletting, purging, antimony, and low diet, which received the name of antiphlogistics. On the other hand, a tubercular disease, especially when it attacked the lung, was supposed to be almost uniformly fatal, and altogether beyond the reach of art.

Now these conclusions are erroneous. We have previously seen that an analeptic treatment frequently cures tubercular diseases; while the antiphlogistic treatment, formerly supposed capable of cutting short inflammations, not only fails to do so, but constitutes a most fatal practice. Much of this error depended on unacquaintance with the natural progress of disease. Most diseases in vigorous constitutions, so far from having a tendency to destroy, have a marked tendency to get well of themselves; whilst instead of loss of blood, weakness, and prostration being remedies, they are the sources of danger and the chief causes of the fatal result.

Again, malignant growths were supposed to be seated in the blood—an idea which rendered operating useless; whilst innocent growths were supposed to be capable of going away of themselves, or to be the only ones admitting of surgical interference. In this, also, a great change in opinion has been effected; so that cancers like other growths, are now known to have been successfully extirpated.

But further, how is it possible to know the effect of any remedy whatever, unless it be ascertained, in the first instance, not only what is the natural termination, but also the natural duration of a disease? We know that small-pox, scarlatina, measles, and similar affections, run a certain course, and no one thinks of cutting them short, or proposing different kinds of remedies for that pur-

pose. The real principle of treatment is to conduct them to a favorable termination. Should not the same rule apply to many other diseases?

Some years ago Dr. Hamilton Bell stated that fifteen drops of the tincture of muriate of iron was a valuable remedy in erysipelas, but how valuable was not shown, because it was not attempted to be proved that the remedy diminished the mortality, or shortened the progress of the disease. Notwithstanding, this remedy was at once largely given, and it was said, with universally good results. I remember accompanying M. Louis, many years ago, in his visit in the Hotel Dieu, and was much struck by seeing many cases there of severe erysipelas of the scalp. On asking him what treatment he pursued, he answered, none at all, because they all rapidly got well of themselves in healthy constitutions. And, in fact, on following these cases from day to day I found that they all did so get well. I need scarcely say that in the Royal Infirmary I have seen many severe cases of erysipelas. I have never given the tincture of muriate of iron, or anything but good diet, with lotions of acetate of lead, flour or oil locally to alleviate irritation, and I have not had a fatal case. Nor has it ever appeared to me that the tincture of muriate of iron could have shortened the progress of the disease. I need scarcely say that any remedy might easily obtain a great reputation if given in diseases that almost always get well of themselves.

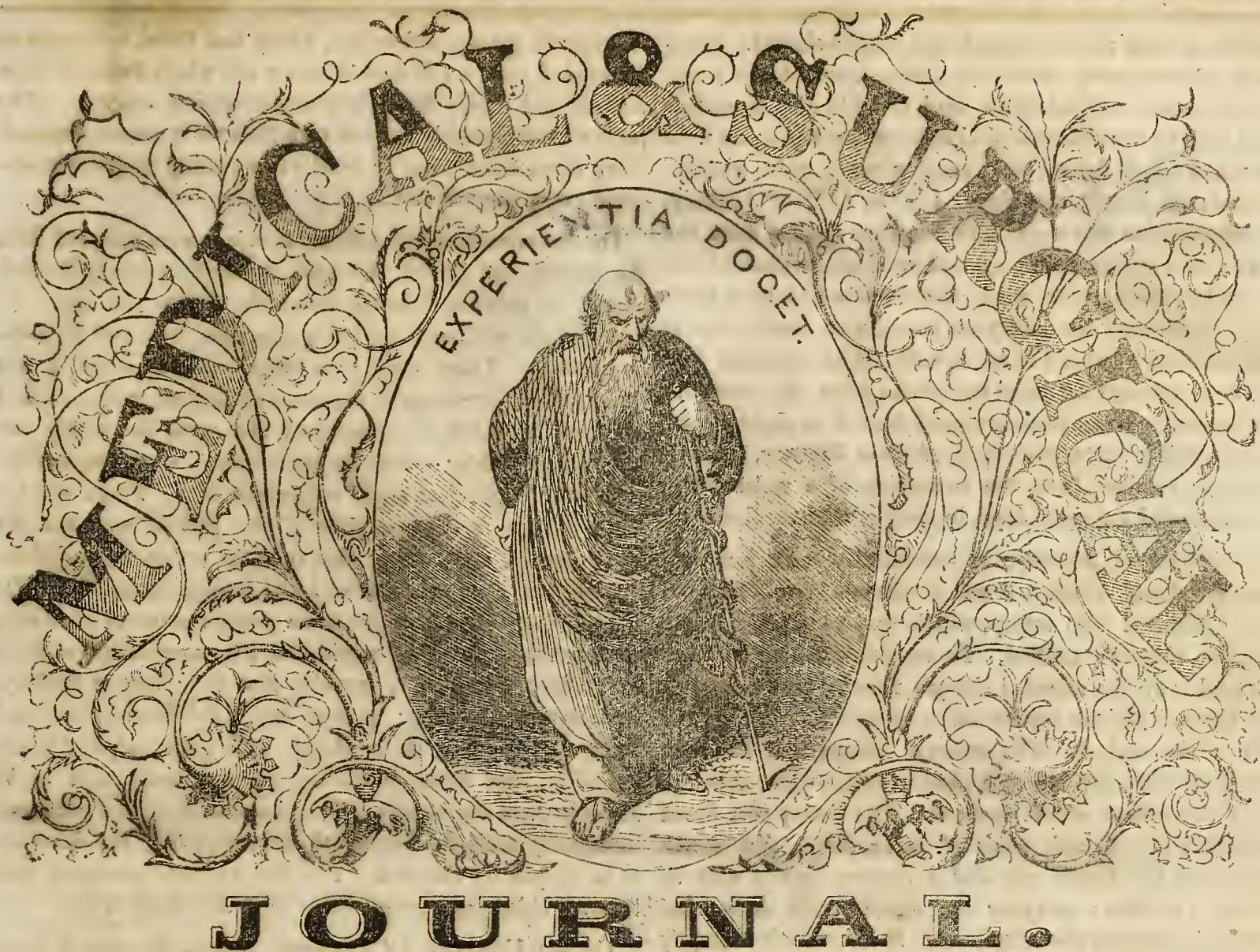
Again, look at rheumatism. Every drug and every system of treatment has been tried. In acute cases, bleeding, purging, antimony, mercury, the whole class of sedatives and narcotics, stimulants, quinine and lemon-juice, large doses of alkalies, numerous specifics, hot baths, cold baths, dry frictions and moist applications in every form. Yet under every one of these remedies, however opposite in their nature, notable cures have been performed. Is not the conclusion obvious, that the disease follows a certain progress, and that although many of these remedies may retard convalescence, it has yet to be proved which, if any, shorten its duration, even one hour? —

One method of prosecuting therapeutics, therefore, is to investigate—1st, how long a disease naturally takes to get well of itself under favorable circumstances; 2ndly, what is its progress under unfavorable circumstances; and lastly, this being known, how far remedies are capable of shortening its duration. If every young practitioner would dedicate his life to the elucidation of the natural progress of only one disease, he would do more for medical practice than has been accomplished by centuries of empirical trials of remedies.

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CONFEDERATE STATES



Vol. I.

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No. 7.

ORIGINAL COMMUNICATIONS.

ART. I.—*Case of Traumatic Femoral Aneurism—Treated by Digital Compression—Ligation afterwards of the External Iliac Artery.* Reported by JACKSON CHAMBLISS, Surgeon P. A. C. S.

Private John H. Gatewood, company "F," 21st Georgia regiment; aged 32; five feet eleven inches in height; weight 145; light hair; blue eyes; fair complexion; occupation a farmer. General health good, when enlisted, on the 24th of January, 1861. Wounded at the second battle of Manassas, August 28th, 1862. General health good previous to and at the time of receiving wound. Small ball entering just behind left trochanter, passing out below perineum, entering right thigh opposite, passing through and coming out at the external aspect at middle of upper third of the thigh; bleeding was profuse for several minutes; his clothes were taken off, and cold water poured from a canteen upon his head and limb; hemorrhage was soon arrested, when he was removed to Middleburg, Virginia, where he remained nine weeks closely confined to bed. His health during this time was, in other respects, good. He was now sent home, where he

remained until April 12th, 1863, when he was received as a patient in Polk Hospital, Rome, Georgia. Here digital compression was used for fifty-three hours; pulsation was not arrested in the tumor after removing the compression. From irritation of the thumb, a large bubo resulted in the groin, which gave much uneasiness for three or four weeks.

Patient entered the hospital October 31st, 1863. His condition was as follows: General health good; complained only of right thigh and leg; could walk about some; but the least exertion of body or mental excitement produced great pain, which was principally located in the region of the wound at upper third of thigh; the thigh was much enlarged at upper third; there was an extensive bulging of the tissues internally, which extended quite to the perineum; there was also a bulging of the parts in the course of the femoral artery for five or six inches, extending to near the ramus of the pubis. The *bruit* could be plainly heard in this part of the tumor at all times; it could not be heard so plainly internally, or over the largest part of the tumor, except after exercise. There was no general discoloration of the skin over the tumor. At the point where digital compression was used over the ramus of the pubis there was a dark-bluish discoloration. The cicatrix, which was in the centre of the discoloration, was of even a darker hue, and very sensitive to the touch. The femoral artery at

this point seemed much enlarged and funnel-shaped. Compression of the artery above the tumor arrested the *bruit*. The patient was confined to his ward and his diet regulated. On the 15th of December, digital compression was again used for one and a half hours; but, causing much pain, was discontinued; no benefit resulting. On the 18th of January, 1864, compression was used, with bandage applied from the toes up; compresses being applied over the region of the tumor and up to the point where compression had been used. This was continued for thirty-six hours, with much pain to the patient, and resulting in no benefit. The aneurism first made its appearance in about two weeks after the reception of the wound. The external wound healed in eight weeks. It may be well to state, that, on the 15th of January, constant hemorrhage resulted from the extraction of a molar tooth, which continued for eight days, in spite of all remedies used.

On the 31st of January, in consultation with Surgeons Gibson, Read and Dudley, it was decided as best to ligate at once the external iliac artery, which was performed pretty much after Cooper's method. In making the incision down to the tendon of the external oblique muscle, care was taken to tear through all the superficial epigastric vessels with the handle of the scalpel. The internal oblique and transversalis muscles were divided on a grooved director, for about an inch, in the course of the incision. The artery was found and slightly raised with point of index finger, and sheath divided with the finger nail, and a ligature passed with no difficulty. Previous to tying the ligature, the artery was compressed between the thumb and finger, which promptly controlled all pulsation in the tumor. There was hardly an ounce of blood lost in the operation; the lips of the wound were brought together with four or five interrupted sutures, supported by adhesive straps; compresses of lint were applied with a roller bandage; the limb was enveloped in cotton batting, and bandaged from the toes up; the patient was placed in bed, with thigh and leg slightly flexed, the knee being supported on a pillow. Chloroform was administered during the operation; from the effects of which the patient re-acted well.

On the evening of the 31st instant, ten hours after the operation, I found the patient restless and complaining of some pain in the wound. There had been a slight discharge of blood, which had coagulated, adhering the compresses closely to the wound. Pulse 96. Respiration 18, easy. Temperature of hand 76°, affected foot 60°, opposite foot 68°, Fahrenheit. Skin warm and moist. Had had two full consistent dark-colored evacuations immediately after the operation, causing no pain. Opiates administered to induce sleep. There was but little change in his condition until February 3d, when a dark discoloration appeared around the lower lip of wound, resembling ecchymosis. From this an erysipelatous blush extended over the scrotum and crest of ilium, up the right side, to near the seventh rib. Pulse 120. Respiration 25. Temperature of hand 96°, affected foot 86°, opposite foot 89°. Skin soft and dry. Tongue furred in middle, tips and edges red. Having given, on the previous night a dose

of calomel, ipecac, and opium, which had failed to operate as directed, I gave a full dose of castor oil, which induced three copious and dark-colored evacuations during the day. The parts were thoroughly painted with tincture of iodine, repeated every three hours, and tr. ferri. chlor., thirty drops, administered every three hours.

On the evening of the 4th, all dressings were removed from the wound, the lips of the same appearing entirely healed, except at point of ligature about the centre, the upper lip looked quite well, and the lower somewhat improved from the day before. There was a thin sanious discharge which was quite foetid; dressings of lint were continued, being retained in place by roller bandages, and the parts frequently wet with disinfectants; iodine having blistered the parts, was discontinued; opiates at night to procure rest. There was but little change in the condition of the patient until the 9th inst., except that during this time the erysipelatous inflammation had been subdued and the tongue cleaned off. On the evening of the 9th there was a profuse grumous discharge, very foetid, pulse 114, respiration 21, temperature of hand 98°, affected foot 88°, opposite foot 90°; tongue healthy; skin warm and moist; patient much debilitated; tr. ferri. chlor. decreased to thirty drops, with quin. sulph. 2 grains ter-daily; diet more nutritious; an occasional dose of oil given to open the bowels. The grumous discharge continued incessantly until the fourteenth day, requiring the dressings to be frequently renewed. The lint was now saturated with tr. ferri. chlor., and disinfectants were also freely used.

On the 15th inst. all discharge ceased, the clots of blood came away from the wound which presented a healthy granulated appearance, with discharge of healthy pus. The appetite, which was at first poor, had now greatly improved. The spirits of the patient good, and his whole condition flattering; pulse 110, respiration 17, temperature of hand 88°, affected foot 78°, opposite foot 80°. He now continued to improve until the afternoon of the 17th inst., the eighteenth day after the operation, when violent arterial hemorrhage occurred, from which he died in a few minutes. I saw him immediately after the bleeding commenced, he was then speechless, pulseless, and bathed in a cold perspiration. No remedies could be administered. On examination, I found the wound and bed flooded with blood.

Post Mortem Appearances.—External wound gaping and filled with clotted blood; lower lip much sloughed; ulceration over artery where digital compression was used; ligature detached with some effort, holding a firm clot in its tie; blood extravasated extensively under the integuments over crest of ilium, and up the corresponding side to near the seventh rib; tissues were blackened and filled with clotted blood and pus in the course of the erysipelatous inflammation. A careful dissection of the thigh revealed two aneurismal tumors, one 5½ inches in length and 3½ inches in diameter, and the other 3 inches in length and 1½ inches in diameter, each of an ovoid form and connected together by a neck ½ an inch in length and ½ inch in diameter, freely communicating the two

cavities; through this neck entered the profunda and vein, side by side.

The largest tumor laid internally imbedded in the fibres of the adductor brevis muscle, and perfectly enveloped by them, and extending nearly the whole length of this muscle—a deep hollow or bed being formed in the surrounding muscle corresponding to the size of the tumor. This tumor is seemingly formed by the expansion of the vein. The smaller tumor laid immediately under the femoral artery, extending some distance above and below the origin of the profunda artery, and resting upon the inner border of the vastus intermuscular muscle, and upon the thigh bone. The portion of this muscle beneath the tumor was almost entirely absorbed, making a deep impression, which extended quite to the bone. This tumor was seemingly formed by the expansion of the artery. An incision made into the larger tumor revealed slightly clotted dark blood, with no fibrinous deposits or layers; the sac, or membrane proper, was about double the thickness of the femoral artery, but much more dense and tenacious in its structure; internal surface smooth, resembling a serous surface, of a pale, pinkish color, with here and there dark clouded discolorations. The small tumor contained dark blood unclotted, the membrane of same, and the neck connecting the two tumors being of the same thickness of the larger tumor; but two openings exist in these tumors or the neck. The entrance of the profunda artery forming one, and that of the profunda vein the other. These vessels are quite small at their junction with the neck of the tumors; smaller than at their origins about one inch above. On examination of external iliac artery at point of ligature, the upper end was found completely plugged for one and a quarter inches, and the lower end imperfectly for one inch, this plug being apparently washed out by the recurrent circulation. The external iliac gives off neither the epigastric nor circumflex arteries, these vessels arising in common with other small vessels from large trunks given off from the femoral, just below Poupart's ligament. One of these trunks, half the size of the femoral, coursed downwards for several inches, with the femoral lying close by its side, previous to dividing into small vessels. The femoral artery and vein were found perfectly healthy, and of natural size throughout their course. The wound through the abdominal muscles was perfectly healthy. The external iliac artery was slightly adherent to the vein at point of ligature, the vein, however, was perfectly healthy and pervious. The peritoneum was found perfectly healthy, with no tendency to protusion of the intestines. There was no extravasation of blood within pelvic cavity or abdominal muscles previous to performing the operation of ligation of the external iliac. I saw my patient almost daily for three months, never failing to examine closely the condition of the tumor. The diagnosis, to my mind, of the diseased condition of the femoral was beyond doubt, and I was perfectly satisfied that it was greatly enlarged at the point where digital compression was used. Out of a number of professional gentlemen who examined the case with me, I know of not one who differed from me in the above opinion. The in-

ternal bulging was more mysterious. We were not satisfied as to whether the profunda was implicated or not. The apparent funnel shape of the femoral at the point where digital compression was used can, I think, be accounted for when we consider the large trunk which laid by its side, instead of feeling one artery, the impulse of two was given to the touch. It was impossible to trace the pulsations of the femoral over the small tumor; this I tried repeatedly.

The sutures were all removed on the 5th of February, having ulcerated but slightly; the sanious discharge contained many fat, but few pus globules; there was a slight *bruit* detected in the tumor on the 6th inst., which continued until the death of the patient with but little increase; no pulsation could be detected in the arteries of the popliteal space, leg or foot; the toes and patella of the limb were cooler to the touch than the surface of the limb, or the toes and patella of the opposite limb, yet the patient did not complain of the least uneasiness in the limb from the first; the limb at no time seemed to require any degree of artificial heat. The tumor seemed to decrease greatly after the first few days of the operation; the lips of the wound, though apparently healed, were soon broken down by the grumous discharge, causing some ulceration. The ligature securing the artery was but little interfered with during the treatment. There was considerable nervous excitement until the tenth day, requiring frequent and liberal doses of opium to procure rest; the patient was, however, quite rational and resolute; the tongue was never heavily coated; there was more or less thirst until the fourteenth day. Respiration, though frequent, was always easy; the bowels, though constipated, were not obstinately so; there was not the least tendency to peritonitis; the skin was usually warm and moist, without profuse perspiration; the urine was generally scant and highly colored, and passed with some pain; there were no marked deposits; the pulse, though frequent and full, was quite compressible.

From tabulated notes, taken morning and night, daily, and filed with this report in the office of the Surgeon-General, I have prepared the following summary:

From evening of Jan. 31st to evening of Feb. 15th.	Evening.	Average.	Morning.	Average.	Total average of all reckonings taken.
Pulse ranged from	96 to 130	119	90 to 130	115	117
Respiration ranged from	13 to 30	24	16 to 29	22	23
Temperature of hand ranged from	76° to 99°	93°	88° to 99°	96°	94°
Temperature of affected foot ranged from	60° to 88°	82°	66° to 91°	81°	83°
Temperature of opposite foot ranged from	68° to 93°	85°	68° to 94°	87°	86°

ART. II.—*Healing of Gun-Shot Wounds by First Intention.* By MIDDLETON MICHEL, Surgeon P. A. C. S.

The past three years' experience of the ravages of the minie ball in its destructive ploughing up of the textures while inflicting its characteristic wound, would scarcely appear to indulge the inquiry whether such lesion can ever possibly heal by first intention.

The contingent circumstances which could permit the transit of the conical ball, in such a manner, through the several planes of the different surfaces and fibres, of all the structures, as simply to separate or divide, rather than confuse or lacerate them, would imply a series of coincidences so remarkable in themselves, as would appear to render such an occurrence wholly improbable. The very announcement that a gun-shot wound, which we know must suppurate, should fall into appositions throughout its continuity, pour out plastic lymph spontaneously, assuming organization, and re-establish union, appears to subvert the best ascertained and most reliable dogmas in the science of surgery; yet, we are prepared to state that, notwithstanding the difficulties of the question and the insufficiency of many attempts at a reasonable explanation, such a wound may present the phenomenon of spontaneous cure: that is, without suppurating, at most exhaling only from its surface that amount of formative product interposed to bring the surfaces into more speedy coherence.

That small size round-shot, or even the round ball, should penetrate a part, dissect up the textures, and produce no greater disturbance than is looked for from the puncture of a sharp instrument, is a matter of no great wonder. All the old writers, Hunter among them, furnish occasional instances of immediate re-union in superficial injuries by the round ball. More modern authorities, such as Larrey and Sanson, Vidal de Cassis, and others, have absolutely seen the joints transfixed, and though clearly opened, the case progress with rapidity and little inconvenience to a perfect cure; but, that the conical ball should deport itself sometimes in the same way, we are ready to confess we were not willing to admit, until a broad reference to the Surgeons of the Confederate Army supplied us with results of an experience too significant to omit mention in detail.

Surgeon A. M. Fauntleroy, Medical Director of the department of North Carolina, has communicated to us the case of a private of the 8th Louisiana regiment, who was shot by the accidental discharge of a companion's gun, (rifle-minie.) The ball entered the inside of the left foot, coursing the arch of the instep, coming out at a point opposite its entrance. Suppuration never occurred, and the wound healed by first intention. At the battle of Drainsville, Surgeon E. S. Gaillard had under his notice a private whose gastrocnemius muscle was perforated by a minie ball, yet this party recovered without suppuration. Surgeon W. S. Mitchell, Chief Surgeon of Rodes' division, informs me, that Lieutenant E., of the 12th Georgia regiment, was wounded by a minie ball, which entered about half an inch above the dorsum of the penis, to the right of the middle line, making its exit on the outer and posterior portion of the right buttock. There was no suppuration. The lieutenant was never confined to bed, and the orifice of exit was entirely closed by the third day. The orifice of entrance closed almost immediately by scab, which remained six or eight days.

Surgeon J. B. Read gives me the case of Lieutenant N. R., of the 10th Virginia cavalry, wounded June 20th, 1863, at the cavalry battle of Brandy Station. A minie ball entered

the sixth intercostal space, on right side, making its exit at fourth intercostal space of the same side, three-quarters of an inch externally to the nipple. Expectoration of blood and escape of some bubbles of air were observed, but all of this disappeared by the 30th June. No suppuration occurred, and at this period, after the injury, no scabs existed on either wound. Auscultation revealed a perfectly healthy lung.

There seems to be some common features of resemblance between the instances above recorded, deserving of notice, as perhaps indicating the conditions most favorable towards such results. These are—the superficial nature of the injuries, the obliquity, and, perhaps, valvular character of the wounds, and the short range of fire, at least in two of the cases, the ball entering very soon after its discharge from the piece, with its initial velocity, which we know is the maximum velocity of a ball. In one instance, the missile follows the convexity of the instep, in the second case, notwithstanding the diversity of sentiment as to its passage through the abdomen, there is little doubt of its having coursed along the walls of that cavity, and in the chest wound, as sometimes happens, the ball passed, in all probability, between the lung and the walls of the thorax without seriously wounding the pleura, and certainly not the lung, since careful auscultation disclosed not the slightest impairment in the functions of that organ. Nor will it be argued that the expectoration of blood, or even escape of air, are indications to the contrary, since these phenomena are not unequivocal evidences of lesion of this organ.

But what is far more remarkable in this connection, we have still to record an equally favorable termination, where more serious injury has been inflicted, involving deeper seated organs, and complicated with fracture. Assistant-Surgeon McQueen, of Daniel's brigade, reports that after the battle of Chancellorsville, among the wounded remaining in his charge at the "Lacey" house, was a man who presented a compound comminuted fracture of the upper-third of the femur, from a minie ball, and the wound healed in less than one week, without suppuration. Surgeon H. F. Campbell furnishes me the history of Lieutenant-Colonel —, who was wounded through both thighs. The left thigh was fractured; the right presented a simple flesh wound. While the former underwent the reparation incident upon such an accident, suppurating abundantly, the flesh wound, though a deep one, healed promptly without any discharge, the patient himself manifesting some concern at the circumstance, under the impression, very common among the uninitiated, that his wound could not be doing well, since it did not discharge pus like the other.

The following cases, though open to the objection of not having been under the continued supervision of the surgeons who relate them from the commencement, are deeply interesting as exhibiting those powers, founded in the autocracy of nature, even in the presence of the gravest accidents of battle. Surgeon Read reports that Lieut. S—, of the 3d Georgia regiment, was wounded July 23d, 1863, at Manassas Gap, by a minie ball, which traversed both thighs just above the knees, lodging on the outer side of the right knee. The patient was in the act of stepping forward at the time. He lay four weeks

without surgical treatment, with one thigh fractured; and, after sixty miles transportation in a wagon, reached the railroad which brought him to Richmond. On entering the hospital, under the able care of Surgeon Read, his wounds are found covered by dry scabs, and being a physician himself, he gives the assurance that there had been no suppuration. At the expiration of four weeks he had used crutches. There was consolidation, with one and a quarter inches of shortening on right side.

We are also indebted to Surgeon C. J. Clarke, of the Alabama Hospital, for the next: Jonathan Sykes, of the 13th Alabama regiment, at the battle of Chancellorsville, May 3d, 1863, was wounded through upper-third of the thigh, ball entering six inches below the anterior superior spinous process of the ilium. He entered Dr. Clarke's hospital the 23d May. Neither the ball nor any fragments of bone had been removed; there had been no purulent discharge from the wound. The wound, at the time of his arrival, was completely healed; his limb was, however, placed on a double-inclined plane, with suspensory slings; no suppuration occurred during his stay in the hospital. He made a good recovery, with a limb shortened two inches.

The above cases, supported by all the evidence necessary fully to substantiate them, and their possible importance in a medico-legal aspect, will authorize a particular review of the principles of pathology, upon which they most likely depend.

The great danger dependent upon a compound comminuted fracture, accompanied by all the commotion or destruction of the soft parts which may be conceived to exist, is inflammation and its products; and experience teaches that the introduction of air into such a wound is, above all other causes, that most fraught with pernicious consequences; for it is such an accident that inevitably gives rise to high inflammatory action, and this, in its turn, to the production of pus, which interrupts, suspends, and inevitably postpones re-union. A more or less prompt healing by first intention under similar breaches of continuity, when the superjacent integuments are uninjured, is of daily occurrence; and a comminuted fracture, with loss of substance and such displacement of its payments as to produce considerable shortening of a limb, with laceration of the soft parts, injury of the periosteum, destruction of the muscles, their sheaths and surrounding cellular tissue, will often become repaired without the development of suppuration, if the introduction of air has been prevented. The extravasation of blood and exudants of a viscid and gelatinous consistency, are very soon transformed into the provisional and definitive callus and callulo-fibroid structures, which bridge the entire track of the injury, without evolution of the morbid products of inflammation. Therefore, it may be possible in certain exceptional and very rare conditions of a gun-shot wound, in which the orifices, from their obliquity or valvular state, perfectly exclude the ingress of air, that it should find itself placed in no dissimilar condition from an ordinary comminuted fracture. The mere possibility of such an event is certainly exhibited in the illustrations above noted, while the extreme rarity of the occurrence is equally shown by the very

few cases we have been able to obtain, from an army scattered over so large a part of the Confederacy, and after all the many hostile encounters in which it has been engaged.

From the relations in which we have sometimes found the walls of the bullet track in certain portions of their extent—that of nearly complete apposition, and in a short time of partial coherence—we must refer these examples of immediate adhesion to accidental coincidences in the special direction taken by the missile through the organs of the body, consoorted, fortunately with its maximum velocity. To these physical conditions, so naturally and obviously interdicting the entrance of air, rather than to any peculiar constitutional healthiness on the part of the subject, would I refer so unexpected and favorable an issue. With these cases before us, then, we must conclude that, long as the contrary opinion has been entertained, it is now beyond doubt, that even deep-seated lesions of the character we have been examining, do occasionally heal by first intention.

Connate to this question, is the similar inquiry, whether this kind of union be more common where the injury affects the appearance of an incised wound.

That gun-shot wounds may assume such an aspect, when caused by the round ball, was known to Guthrie; and I have, myself, recently corroborated the statements of others, that the same effects may take place when the minie ball is the wounding agent.

M. Derigan, attached to the naval brigade before Sebastopol, noted the regularity of the edges of some of these wounds, and mentions instances in which the minie ball caused as clean a wound as if done by a sharp knife; the nose, in one instance, having been divided at the junction of the cartilages with the bones; the lower portion dropping down, but adhering by a good pedicle, and healing when brought together as in hare-lip. While recently among the wounded on the battle-fields of Spotsylvania and the Wilderness, I met three examples of perfect incised wounds produced by the conical ball, possibly at short-range, as they occurred during the attack upon our breastworks. All of these were about the head and face. Pieces of shell, fragments of foreign bodies, such as solid parts of the soldier's equipments, and bone itself from the fractured limb of a fellow-comrade, have been found to inflict wounds closely resembling incisions, but the minie ball also, as we have observed, may occasion such results when unchanged in shape during its flight, by striking at a considerable angle of incidence upon a broad and flat bone immediately subcutaneous, or over which the superjacent integument is tensely drawn; or where, again, it reaches some reduplication or fold of very lax skin, such as obtains in the neighborhood of joints on the surface of either flexion or of extension, when the ball forces the integument into a cul-de-sac, producing a rent which, owing to the elasticity of the texture, appears even smaller than the object which has caused it. Such linear wounds have been far more frequent about the head than elsewhere, and exist as such only by conditional location, for we have repeatedly remarked in civil practice, similar effects un-

der the agency of varied forms of wounding bodies when occurring about the scalp.

It has been questioned whether the edges of such wounds, more or less contused as they are found to be on nearer inspection, are any more suitable for primary adhesion. They unite, it is presumed, at least in part of their extent when brought in regular contact, and this is all that the experience of many teaches; but, from what I have seen of these wounds, I am disposed to hope for more frequent success when they are properly adjusted and in perfect apposition. From the worse looking lacerated wounds I have sometimes obtained excellent results, and in one of the three cases stated as occurring on the battle-field, the wound healed throughout its entire extent by first intention. This was a private of company "G," 3d South Carolina regiment, wounded through the face. One of the wounds presented so regular an incision through cheek and lip, that Surgeon J. Evans, who kindly exhibited it to me, brought down the flap and united its edges with sutures, and adhesion supervened promptly and so perfectly, that a linear cicatrix will perhaps be all that will hereafter indicate the accident.

The rapid closure of such wounds and exclusion of air when practicable, secures this mode of healing even in gun-shot wounds. Great stress should, therefore, be laid upon whatever means are within our reach in injuries about the head and face. Where the integument is loosely adherent and we can operate by *glissement*, the edges may be scarified, if not found in the accidentally incised state alluded to, and be brought together with sutures.

That such prompt cicatrization occurs after punctured wounds which depends doubtless upon the rapidity with which the track closes, through the elasticity of the separated tissues, I had several opportunities of ascertaining during the memorable fights of the 11th and 12th of May. In that remarkable assault on our breastworks, ten lines deep, in which the enemy exhibited unwonted boldness, and a persistent constancy of purpose only interrupted by night and only terminated by a disastrous repulse, a bayonet charge ensued which presented us with this class of wounds for the first time.

Through the courtesy of my friends, Surgeon L. Guild, Medical Director of Gen. Lee's army, and Surgeon J. T. Gilmore, Chief Surgeon of McLaws' division, and Surgeon Baruch, 3d South Carolina battalion, I examined several whose chests had been entirely transfixated by the bayonet, and who were all doing well. Their wounds healed in less than forty-eight hours; two had expectorated a little blood, but careful auscultation could detect no abnormal sounds; there was but little pain present and no cough; no hemorrhage of any account from the wound had been remarked. The men were seated up in their tents on the fourth day eating, and the cordiform and punctured wounds, indicating the heel and point of the bayonet, already healed, were well defined on the respective sides of the chest.

ART. III.—*Case of Gun-Shot Wound of the Knee-Joint.—Ball lodged in the Head of the Tibia.—Extracted through the Joint Six Months after the Accident.—Recovery with a Useful Limb.* By R. A. KINLOCH, Surgeon P. A. C. S., Charleston, S. C.

Private L. C., aged 17 years, Sixth South Carolina regiment, was wounded at the battle of the Seven Pines on the 31st of May, 1862. On the 23d of November, while on a visit to Chester District, S. C., I was requested to see him in consultation with his attending surgeon. I received the following history of his case: He was wounded at the time above specified, while lying on his back, re-loading his gun, with his knees slightly flexed. Was examined by a surgeon on the field, who remarked that his leg would have to be amputated, but who gave no comprehensive opinion as to the direction and extent of the wound, or the position of the ball. Patient walked some distance after he was shot without experiencing very great pain. The following day he was sent to the St. Charles hospital, at Richmond. The limb was then much tumefied and very painful. The ball had entered upon the inner side of the right knee, apparently, a line or two below the articulation. There was no orifice of exit. In the opinion of most of the examining surgeons the ball had lodged; but a few of them, after the progress of the case, were inclined to believe that it had escaped through the orifice of entrance. Consultation developed further differences of opinion as to the precise nature of the wound, the implication of the joint, and the position of the foreign body. It was, however, determined not to interfere by any operative procedure. (The details of treatment need not here be given.) The patient remained in hospital until the 3d of August, never leaving his bed, and scarcely ever changing from the supine position; he had suffered continually from fever, and during a portion of time from traumatic delirium. Finally, he was moved upon a hand-litter to the railroad station, and then to home in Chester. He continued bed-ridden, without experiencing any acute suffering, after recovering from the effect of his journey, until the middle of October. At this time he left his bed and tried the use of crutches. After but little exercise he was compelled to take to bed again, and was a week in recovering from a very painful and inflamed condition of the limb, engendered by the efforts he had made. This was repeated a second and third time with a like result, and, finally, erysipelas attacked the parts about the knee, and extended high up the thigh. He had been, during most of this time, abandoned to expectation with good nourishing diet, and had gained flesh and strength while enjoying the comforts of home; the irritation of the knee, however, had always persisted in a sub-acute form, and the wound had continued to discharge. The amount of discharge varied at different times; the suffering being always less when the discharge was free.

At the time of my visit, (23d November,) patient's general health was good; he was, however, despondent; feared that he would never have the use of the limb, and was willing to have it removed, if I thought it advisable, to rid him of his suffering. The limb was flaccid and attenuated. A fistulous open-

ing upon the inner side of the joint, just below the articular margin of the tibia, indicated the original orifice of entrance; this was discharging a thin pus. The joint was imperfectly ankylosed; the leg very slightly flexed upon the thigh; the tissues about the knee were thickened, and the integument of the thigh and part of that of the leg, indicated a recent attack of erysipelas that had been treated by the local application of the nitrate of silver.

A careful consideration of all the circumstances of the case led me to the following views and practice: As the projectile had come from behind and from the left of the patient, while he was upon his back with the legs in easy flexion, it had probably ranged downwards and outwards. There was no trace of it discoverable in the soft parts. The open wound, continuous discharge, and perpetual irritation, induced me to believe that the ball was imbedded in the tibia. The knee-joint was disorganized and ankylosed from traumatic inflammation. But had the ball lodged in the cavity of the joint? or had it even perforated the capsule in reaching the head of the tibia? The first question I disposed of readily, by remembering that the patient had walked with ease after the reception of the injury, and had not afterwards suffered the excruciating symptoms that usually attend the presence of a foreign body within the joint. The second question was harder of solution. The traumatic inflammation of the joint could be accounted for as readily upon the supposition of the ball having penetrated the tibia and fractured it through to the joint, as by its supposed passage through the capsule. Fortunately, the correct interpretation of the disorganized state of the joint was not of great practical importance. It was enough to know that the disorganization existed. This knowledge inculcated the belief that the foreign body might be sought *by way of the joint*, without seriously jeopardizing the patient. I conceived that the cutting into this joint would not develop the symptoms that are expected to ensue from cutting into a joint whose tissues approach the normal condition. I determined then to search for the foreign body, and to be prepared, if necessary, even to resect the joint. My diagnosis was only inferential, but I considered more positive knowledge only valuable inasmuch as it might enable me more promptly and certainly to get upon the track of the ball.

On the 29th of November, the patient being fully chloroformed, I performed the following operation: 1st.—A semilunar flap of integuments, which include the fistulous opening, was dissected and turned up from the deeper tissues over the inner side of the joint. 2d.—I proceeded with the finger, and afterwards with a large probe, to ascertain the direction of the fistulous track through the deep tissues. I soon discovered that the track could be traced through the lateral ligament of the joint to the depth of several inches. 3d.—I incised the lateral ligament freely, and passing my finger through the opening, I discovered and turned out a piece of necrosed bone about the size of the last phalanx of the finger. This was a portion of the articulating surface of the tibia, which had been detached by the passage of the ball. After its removal, my finger occupied a notch or groove upon the articular

surface of the tibia, and could be forced on downwards and outwards towards the head of the fibula. As the joint, however, was but slightly flexed, the finger could only advance to a certain depth, because of the inner condyle of the femur. Feeling that I was certainly upon the track of the foreign body, I seized the leg of the patient with my left hand, and forcibly flexed the joint until I found that my index finger, which had not been removed from the wound, could by an effort be made to pass on under the articulating surface of the inner condyle of the femur. Upon instituting the flexion some of the bony adhesions snapped asunder with a noise, and my finger was pushed on into a deep cavity in the outer portion of the head of the tibia, and rested upon the foreign body. 4th.—The finger was withdrawn, and a pair of bullet forceps introduced along the track. At the first effort the ball was seized and extracted with great ease. It proved to be a large minie, much flattened, and having a piece of the patient's pantaloons attached. A sponge full of warm water was thrown two or three times into the joint, to wash out the debris from the cavity in which the ball had rested. The joint was found to be completely disorganized. The synovial membrane, interarticular cartilages, and crucial ligaments could scarcely be recognized, and the articular surfaces of the bones were deeply eroded.

At this stage of the operation it became a question whether it might not be better practice to get rid of the diseased surfaces, by resecting the joint. I felt apprehensive lest persistence of chronic inflammation in those tissues of low vitality might prevent recovery with a useful limb. I entertained serious misgivings as to the ultimate establishment of complete bony ankylosis, which I thought essential for the well-being of the patient. Having met with uniform success in the operation of resection of the knee for chronic disease, I favored this operation, and would have practised it could I have had the after management of the case. But the necessity I was under for leaving the locality the same day, together with the adverse opinions of my medical friends, decided me to interfere no farther. The tegumentary flap was brought into position and secured by three points of suture, only the dependent corner of the wound being kept open by a tent; the limb was extended upon a bolster; cold water dressing was applied; and a full anodyne administered. I learned that the case progressed quite satisfactorily. But little general or local excitement followed the operation. The wound healed kindly, and in three weeks the patient experienced "*a feeling of relief that he had not known since the accident.*" In a letter received from the patient, dated April 23d, 1864, giving me account of his progress since the operation, he says:

"The only drawback to my convalescence was an attack of erysipelas, in Jan., 1863, which I attributed to imprudence in eating. On the 17th of February, 1863, I began to move about on crutches, the wound having entirely healed before this. Since then, the limb has gained rapidly in strength. In May I laid aside my crutches and took to using a stick. I can now walk a mile without resting, and often walk some without my stick. My joint is stiff, but I think I shall some day be

able to run. I can now run a few steps, and can truly say the leg is well. I practise walking without my stick as much as I can."

ART. IV.—*On Vaccination and Varicellous Diseases.* By O. KRAIZ, Surgeon P. A. C. S.

The following remarks on vaccination and varicellous diseases have been suggested to me from my own experience. Spurious vaccine and its deleterious influences on vaccination seem to me worthy of further investigation, as a subject hitherto not sufficiently appreciated.

In order to define my stand-point clearly, let me state, at the outset, that Liebig's Theory of Fermentation is, till now, the best to explain the phenomena of vaccination, and that all the anomalies occurring may be best elucidated by this hypothesis. At the same time I do not feel warranted in subscribing blindly to it; but I think we have not any better as yet, and I simply adopt it in the same manner as I would have to conform to the atomic theory in treating about chemistry.

In vaccinating a subject we introduce, then, the yeast, the virus, into the circulation, to produce the fermentation and its result, the scab. If there is a certain substance in the system for the virus to re-act upon, the scab will be formed and the subject is vaccinated. If, on the contrary, this substance is entirely deficient or modified in some way or other, no scab or an imperfect one will be the result.

With very few exceptions, the good vaccine matter will produce a normal scab on the subject never vaccinated before. The re-acting matter in the system is eliminated, and by this process the liability to the infection of small-pox rendered impossible or greatly diminished. Possibly, in a long interval of time, this matter may be re-organized in the body, but never to its original state. I say never, because such a subject may be attacked by varioloides, but never by variola.

If this re-acting matter is re-organized as nearly as possible to its original state, the second vaccination will produce a scab also, but never a perfect one. It may be perfect for the protection of the individual on whom it appears, but it offers no guarantee for re-vaccination on other subjects. I call this a pseudo-scab. This scab may yet retain much of the original fermenting property, but not the same as the genuine. If this virus is used again for the re-vaccination of an individual, its product will offer again less guarantee of being protective. Continuing in this manner, the scab will finally contain nothing but common suppurative matter—pus—as if taken from any other suppurating place in the body. The form of the scab itself will be more or less modified and departing from its normal structure.

As I have no book of reference on the subject, I quote the following from memory:

Some years ago, the Academy of Medicine in Paris investigated very closely the fact, if syphilis could be transferred by vaccination. The result obtained by repeated and most direct experiments was that it could not be communicated by

transmission of genuine vaccine virus from one individual to another, affected with syphilis in any of its stages. Liebig's explanatory theory of fermentation holds good here. The vaccine virus will re-act only on certain substances in the system and ignore others entirely. We know, at the same time, that matter from a syphilitic suppurating surface will reproduce syphilitic symptoms on another subject. I have had occasion to observe several well-defined cases of Rupia syphilitica produced solely by vaccination. Other respectable surgeons, worthy of implicit belief from their scientific attainments, have noticed the same and similar facts repeatedly.

These subjects had never syphilis before, otherwise the inference would be doubtful or worthless altogether. Therefore, instead of having had vaccine virus inserted, they had been inoculated with syphilis. I have seen one case where the product of the vaccination was surpetigo rodeus, a frightful disease of, I believe, a cancerous character. Some cases had herpes exedens as the result of vaccination on their arm.

The syphilitic cases had been treated for other cutaneous diseases without any material amelioration. The mercurial treatment removed the symptoms at once. I have never seen anomalous results from vaccination if the following precaution was strictly adhered to: The vaccine matter used was taken from a healthy infant, never vaccinated before.

The indiscriminate vaccination and re-vaccination from arm to arm has been, in my opinion, the principal cause of the deterioration of the vaccine virus, and of producing cutaneous diseases from vaccination. A second cause may be found in the fact, that the virus used is old and too rarely regenerated by passing it through the cow. Cow virus will fail only 1 in 100; good common virus will fail 3 in 100, if I remember right.

ART. V.—*Operations in Reporative Surgery.* By CHAS. BELL GIBSON, Surgeon P. A. C. S.

W. M. Wyatt, private, Page's battery, 1st regiment Virginia artillery; age 46; occupation a farmer: was admitted into General hospital, No. 1, Richmond, Sept. 17, 1863. Wounded 13th September in the face by a piece of shell. His condition, on entering the hospital, was as follows:

The lower jaw was fractured and carried away from the first molar tooth of the right side, near the angle of the jaw on the left side; the tongue was badly lacerated, and the soft tissues forming a portion of the cheeks, the whole lower lip, and the original covering of the chin had been carried away.

His appearance was frightful and most pitiable, and as sloughing had commenced, the prognosis was most unfavorable.

Fortunately, however, in a few days the sloughing process ceased, and although suppuration was profuse and very offensive, the granulating process at last became fairly established, and by the 10th November (in fifty-four days after receipt of injury) he was well enough to go to his home on furlough. He had been told that an attempt might be made to improve

his appearance by an operation at a future day, and he accordingly returned to the hospital early in January.

By this time cicatrization had occurred. Irregular and lumpy cicatrices extended into the cheeks, from the corners of the upper lip (which had not been involved in the wound) and down upon the throat; and the tongue appeared in the chasm representing his mouth, adhering to the transverse edge of the cicatrix two inches below the border of the upper lip.

After careful inspection as to the best means of relieving the deformity, it was determined to attempt to make a new lower lip, by dissecting up the tissues of the throat and cheeks, sliding them to a level with the border of the upper lip, and securing them in position by sutures.

The operation was performed on the 10th of January, 1864, without chloroform, as it was desirable the patient should not incur the danger of blood passing into the air passages; and the extreme suffering, necessarily attendant, was borne with patience and courage rarely witnessed.

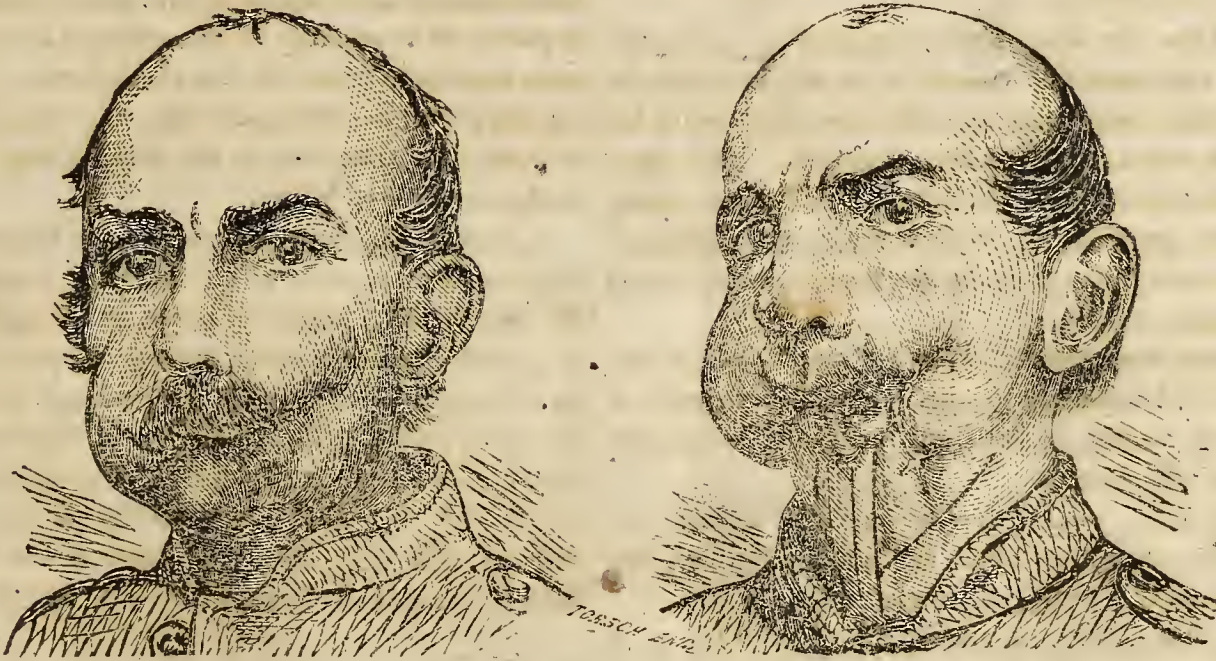
An incision three inches long was made downwards in the centre of the tissues of the throat, terminating about the middle of the thyroid cartilage. From the termination of this incision another was carried, first on the right side and then on the left, upwards and backwards towards either angle of the jaws, each to the extent of three inches; and thus two flaps were marked out. These flaps were then dissected

of the new mouth outwards, and the lumpy and unsightly cicatrices, before mentioned, were cut out, and the wounds also united by silver wire. Adhesive strips and a bandage completed the operation. The lateral dissection of these flaps, of course, left a considerable space on the throat and neck of raw surface. This was expected to granulate and cicatrize, in due time, under water dressing. Directions were given to very careful attendants as to diet and drinks, and an anodyne administered.

On the fourth day the parts were examined, and with the exception of the suture at the upper end of the central line, which had ulcerated through, all was doing well; perfect union had occurred. It was deemed best, however, as the sutures were not producing irritation, to leave them; and thus they were not removed till the tenth day. At this time the parts were perfectly consolidated; the flaps not only united in the centre, but adherent to the subjacent surface. The wound below was suppurating and granulating kindly.

On the 1st of March the patient left the hospital again, for his home, greatly improved in appearance and in his power of articulation. It is probable that some contrivance may be adopted by which he will one day be able to masticate his food.

It is regretted that the record of a case has been lost, in which the upper lip and nostrils were extensively mutilated by a portion of shell, and in which plastic surgery was also



(about one-fourth of an inch in thickness) from the subjacent tissues; so that, when the dissection was completed, the two flaps, each being seized at the central incision, could be raised and brought up so as to present an opposing margin or surface to the upper lip. As had been anticipated, it was found that the flaps now required to be incised so as to prevent the edges by which they were to be united to each other in the centre from overlapping; and accordingly about a quarter of an inch in width was removed from each flap along the edges. Then, being again brought up to the border of the upper lip, the flaps were united, in a central line, by interrupted sutures of silver wire. Two incisions were then made from either angle

made eminently useful. The operation was performed in General Hospital, No. 1, in the fall of 1863, upon a patient named Cook, from Georgia. He was returned to his regiment, and when last heard from was on duty with it.

Case Second.

Private R. A. Green, company "C," 18th Virginia regiment, was sent to the reporter by Surgeon Wm. A. Carrington, Medical Director, for examination. He was found to have epithelial cancer of the lower lip, extending from the right commissure to half an inch beyond the middle line, and downwards towards the chin about an inch.

In view of the probable lengthening of life, and possible eradication of the disease by operative procedure, it was advised that the tumour should be removed. The patient was accordingly admitted into General hospital No. 9, and the operation performed on the 29th of May, 1864.

Owing to the extent of the disease, it was deemed impossible to use, effectually, the simple operation of the V-incision, and it was determined to raise and transplant a flap to take the place of the diseased mass and to form a new lip.

A very small amount of chloroform being given, an incision was made through the right commissure of the lips, to the extent of half an inch; and from this incision another, vertical one, to the extent of an inch and a quarter. A similar straight incision was then made near the left commissure, and the two lower ends of these incisions were connected by a transverse incision. In this way nearly the whole lip was removed, including the diseased portion and a quarter of an inch of healthy tissues around it. The two straight incisions were then continued two inches down over the throat, and the flap dissected and raised between them. This flap was then seized and (the head being slightly bent forwards) brought up to oppose the upper lip, and to meet the incision at the right and near the left commissure—this covering over the space from which the diseased tissue had been removed. The flap was found to fit accurately, and silver-wire sutures were employed. Adhesive strips, a compress and a bandage were applied. On the 30th the patient was transferred to Chimborazo hospital, and entered ward "E," 5th division.

On the 9th June, the sutures were removed by Assistant-Surgeon Cherry (to whom the operator is greatly indebted for his kind and skillful management of the case while under his care) and perfect union found to have occurred. The operation performed in this case is, it is believed, of French origin, and is termed the operation by "Glissement" or "Sliding," and has been several times done by the reporter, and always with the same happy result.

One of the cases was operated upon ten years ago, (a Mr. Smith, formerly of Lunenburg county, and more recently of Ashland, Hanover county, in this State) and in it there has been no return of the disease.

Another case, Mr. —, of Hardy county, Virginia, was operated on in the summer of 1862, at Coyner's Springs, and a few months ago had shown no return of the disease.

In other cases the reporter is unable to say anything as to the return or non-return of the disease.

The common opinion of the epithelial cancers being trivial diseases in comparison with the schivous and medullary, has been clearly proved by M. Paget to be incorrect. The average duration of life with them is, probably, less than four years, and no great prolongation of life would appear, by cases that have been collected, to be obtained by their removal; but it is respectfully submitted whether the prospect of recovery is not improved by an operation in which a perfectly sound and healthy tissue is made to cover a space from which not only the diseased, but a considerable portion of sound tissue, bordering on the diseased, has been removed.

C. S. Medical & Surgical Journal.

RICHMOND, JULY, 1864.

AYRES & WADE.....PUBLISHERS AND PROPRIETORS.

EDITORIAL.

Indigenous Remedies of the South.

A bountiful Providence has spread over the broad surface of our Southern land, all the elements of an independent nationality. The people trusting in the justice of their cause and the resources which surround them, meet with composure their long isolation from the world, and fall back easily and successfully upon themselves and their own products, for all the requirements of life.

The great drain upon the Medical Department from the large number of sick and wounded necessarily attendant on the great levy, *en masse*, of troops for the defence of the country, early forced itself upon the attention of the Surgeon General. The war opened with the proclamation of the enemy that medical and surgical instruments and appliances were considered contraband of war, and this atrocious step* the forerunner of the many kindred acts of barbarity which have marked the progress of this unholy struggle, compels the department to exert its utmost energies to develop the indigenous medicinal agents of the Confederacy. The accompanying supply table, announced from the Surgeon-General's office as being ready for issue to the medical staff, gives satisfactory evidence of these labors.

A most gratifying progress has also been made in the manufacture of chemicals within our own limits. Blue mass of the best quality, nitrate of silver, sweet spirits of nitre, iodide of potass, and many other leading preparations are prepared on a large scale. Botanical gardens and farms are flourishing at various points. Manufactories and laboratories are rising up in every direction, under the wise supervision of our medical chief; and by consulting the accompanying note the reader will see that even amid the wilds of the Trans-Mississippi, fluid extracts and tinctures of the native remedies of the

*At a recent meeting of the American Medical Association in Chicago, a distinguished member of the profession made a noble effort to wipe away this disgraceful stain from his country's escutcheon. Dr. Gardner, of New York, introduced a preamble and resolutions petitioning the Northern government to repeal their orders to consider medical and surgical appliances contraband of war. This gentleman showed that such cruelties rebounded on their own soldiers, many of whom, in the hands of the rebels, shared the suffering resulting from such a policy, while the act itself was worthy of the dark ages of the world's history.

It will surprise our foreign brethren to know that this learned and powerful tribunal of the medical profession of the North, forgetful of the noble and unselfish teachings of the healing art—blind to all save the gratification of a ruinous hate and ungratified revenge—hisred the benevolent brother from the hall.

country have been successfully used by the surgeons of that distant department.†

We expect frequently to ask the attention of the reader to this important subject. Nor should we fail here to notice the useful and laborious effort of Surgeon Porcher, in bringing before the public in his work on the Resources of the Southern Fields and Forests the amount of useful material at hand. This valuable essay will receive shortly a careful notice. We will also seize every opportunity of publishing any paper or prescription elucidating the value of the indigenous remedies of the supply table. Our limited space

† Confederate laboratories are in successful operation at the following points:

Trans-Mississippi Department—Surgeons W. R. Johnston and C. D. Curtman, first at Arkadelphia, Arkansas, now at Tyler, Texas. Atlantic Department—Surgeons Piggett, Lincolnton; J. T. Johnson, Charlotte; Chisholm, Columbia; Blackie, Atlanta; Prioleau, Macon; Miller, Mobile; Anderson, Montgomery.

forbids the publication of these reports, *in extenso*, but they will be grouped in the form of abstracts, giving credit to the authors, for their efforts in this very important field. ‡

‡ Surgeons Craighill and Lewis and Assistant-Surgeon Bell report, through the Surgeon General's office, some comparative experiments with the indigenous remedies—especially remarking on the combination of the *Prodophlyum Peltatum* and *Juglans Cinerea*, in the form of extract, as an aperient and cathartic remedy.

These gentlemen, as well as Surgeon McLaughlin, all of Lynchburg Hospital, make favorable notice of the decoctions and syrups of the *Quercus Alba* and *Rubus Villosus* in chronic diarrhoea. The tincture of *Cornus Florida* and *Rubus Villosus* making a good astringent tonic, and the decoction *Humulus Lupulus* and *Cucurbita Citrullus* as a sedative and tonic draught.

The well known virtues of the Wild Cherry bark and the *Polygala Senega* are especially mentioned, and the recent observations of Surg. Claiborne, of Petersburg, published in a former number of this journal, as to the value of the *Phytolacca Decandra* and *Rumex Crispus* in the treatment of Camp Itch, is amply corroborated by our Lynchburg brethren.

Standard Supply Table of the Indigenous Remedies for Field Service and Sick in General Hospital.

BOTANICAL NAMES.	COMMON NAMES.	MEDICAL PROPERTIES.	DOSE.	FORM FOR ISSUE.
<i>Aconus calamus,</i>	Calamus,	Aromatic, stimulant and stomachic,	10 to 20 grs.	Pulv.
" "	"	" " "	1 fl. drachm,	Fl. ext.
<i>Arum tryphillum,</i>	Wake robin, or Indian turnip,	Expectorant; stim. to gland. system, lungs and skin; in emulsion,	10 grs.	Pulv.
<i>Aristolochia serpentaria;</i>	Virginia snake root,	Stimulant, tonic and diaphoretic; in infusion,	1 or 2 ozs.	Rad.
<i>Asarum canadense,</i>	Wild ginger,	Aromat. stimulant, tonic and diaphoretic,	20 to 30 grs.	"
" "	"	" " " " "	$\frac{1}{2}$ to 1 fl. drachm,	Fl. ext.
<i>Asclepias tuberosa,</i>	Pleurisy root, or butterfly weed,	Diaphoretic; in decoction,	1 teacupful,	Rad.
" "	Do. do.	Expectorant,	20 to 60 grs.	Pulv.
<i>Capsicum,</i>	Pepper,	External irritant,	"	Pod.
<i>Cassia marilandica,</i>	American senna,	Stim. stomachic; in gargles,	$\frac{1}{2}$ to 2 drachms,	Tinct.
" "	" "	Cathartic; in infusion,	1 to 3 ounces,	Fol.
" "	" "	" " "	1 to 4 drachms,	Fl. ext.
<i>Chenopodium Anthelmin-</i>	Worm seed,	Anthelmintic, in emulsion with ol. ricini,	"	Sem.
<i>ticum,</i>	Pipsisseway,	Diuretic; in decoction,	1 pint during 24 hours,	"
<i>Chimaphila umbellata,</i>	Hemlock,	Narcotic and sedative,	2 to 3 grs.	Solid ext.
<i>Conium maculatum,</i>	Dogwood,	Tonic, astringent,	20 to 60 grs.	Pulv.
<i>Cornus florida,</i>	"	" " in decoction,	2 fl. ounces,	Cort.
" "	"	Tonic, astringent,	10 to 30 grs.	Solid ext.
" "	"	" " "	1 fl. drachm,	Co. fl. ext.
<i>Cucurbita citrullus,</i>	Watermelon,	Diuretic, in infusion,	Ad libitum,	Sem.
" pepo,	Pumpkin,	Anthelmintic, in emulsion,	2 ounces,	"
<i>Cytisus scoparius,</i>	Scotch broom,	Diuretic, in decoction,	$\frac{1}{2}$ to 1 pt. during 24 hours,	"
<i>Datura Stramonium,</i>	Jamestown weed,	Narcotic; anti-spasmodic and anodyne; tinct. and infusion as local application,	"	Fol.
" "	" "	Internally (local applic. also for ung. stramonium,)	$\frac{1}{4}$ to $\frac{1}{2}$ grain,	Solid ext.
<i>Diospyros virginiana,</i>	Persimmon,	Tonic; in comp. infusions, and gargles,	$\frac{1}{2}$ to 1 drachm,	Cort.
" "	"	Astringent,	10 to 30 grs.	Tinct.
" "	"	"	1 pint during 24 hours,	Pulv.
<i>Erigeron philadelphicum,</i>	Fleabane,	Diuretic; in infusion,	2 to 4 fl. ozs.	Plant,
" canadense,	"	" and astringent; in infusion,	"	Oil,
" "	"	Styptic,	"	Herb,
<i>Eupatorium perfoliatum,</i>	Boneset,	Tonic, diaphoretic; in infusion,	2 to 4 fl. ozs.	"
<i>Euphorbia ipecacuanha,</i>	Ipecacuanha spurge,	Emetic,	15 grs.	Rad.
" corollata,	Large flowery "	Diaphoretic,	5 grs.	"
<i>Frasera walteri,</i>	American columbo,	Tonic; in infusion,	1 to 2 fl. ozs.	"
<i>Gaultheria procumbens,</i>	Partridge berry, or spiky wintergreen,	Stim. aromatic,	"	Oil.
<i>Geranium maculatum,</i>	Cranesbill,	Astringent, in decoction,	1 to 2 fl. ozs.	Rad.
" "	"	"	10 to 15 grs.	Solid ext.
<i>Gentian catesbei,</i>	American gentian,	Tonic, comp. infusion,	1 to 3 fl. ozs.	Rad.
" "	"	"	10 to 30 grs.	Solid ext.
<i>Gillena trifoliata, or gillena stipulacea,</i>	Indian physic,	Emetic,	20 to 30 grs.	Pulv.
<i>Humulus lupulus,</i>	Hop,	Tonic, hypnotic, in infusion,	2 fl. ozs.	"
" "	"	" " "	1 to 3 drachms,	Tinct.
<i>Hyosciamus niger,</i>	Henbane,	Anodyne, soporific,	1 to 3 grs.	Solid ext.
" "	"	"	1 fl. drachm,	Tinct.
<i>Juglans cinerea,</i>	Butternut,	Aperient, cathartic,	20 to 30 grs.	Solid ext.
<i>Juniper communis,</i>	Juniper,	Stim. diuretic, in infusion,	1 pint during 24 hours,	Berry,

Supply Table for Hospitals—Continued.

BOTANICAL NAMES.	COMMON NAMES.	MEDICAL PROPERTIES.	DOSE.	FORM FOR ISSUE.
<i>Laurus sassafras</i> ,	Sassafras,	Stim. aromatic, adjunct to infusions,		Cort.
" "	"	Demulcent,		Pith,
" "	"	Stim. carminative,	2 to 10 drops,	Oil,
<i>Lavandula</i> ,	Lavender,	Stim. aromatic,	30 to 60 drops,	Comp. spts.
<i>Leontodon taraxacum</i> ,	Dandelion,	Alterative,	1 fl. drachm,	Fl. ext.
<i>Liriodendron tulipifera</i> ,	Tulip tree,	Stim. tonic, diaphoretic,	2 to 2 drachms,	Pulv.
" "	"	" " "	1 to 3 fl. drachms,	Co. fl. ext.
<i>Lobelia inflata</i> ,	Lobelia,	Expectorant,	1 to 2 fl. drachms,	Tinct.
<i>Mentha piperita</i> ,	Peppermint,	Arom. stim. and anti-spasmodic	1 to 3 drops,	Oil,
" <i>viridis</i> ,	Mint,	" " in infusion,	Ad libitum,	Herb.
<i>Monarda punctata</i> ,	Horsemint,	Stim. carminative, also adjunct to liniments, inter-		
		nally,	2 to 3 drops,	Oil,
<i>Panax quinquefolium</i> ,	Ginseng,	Demulcent,		Pulv.
<i>Papaver</i> ,	Poppy,	Anodyne, local application,		Heads,
<i>Phytolacca decandra</i> ,	Poke root,	Alterative, for other uses, see Dispensatory,	1 to 5 grs.	Pulv.
<i>Pinoneya pubens</i> ,	Georgia bark,	Tonic and antiperiodic, in infusion,	2 to 3 fl. ozs.	Cort.
" "	"	" " "	1 drachm,	Pulv.
<i>Podophyllum peltatum</i> ,	May apple,	Cathartic,	5 to 15 grs.	Solid ext.
<i>Polygala senega</i> ,	Seneca snake root,	Stim. and expectorant, in decoction,	2 fl. ozs.	Rad.
" "	"	" " "	1 fl. drachm,	Syrup,
<i>Prunus virginiana</i> ,	Wild cherry,	Tonic and sedative, in infusion,	1 to 3 fl. ozs.	Cort.
" "	"	" " "	1 fl. oz.	Syrup,
<i>Quercus alba</i> ,	White oak,	Tonic, local application, fomentation, gargle, &c.		
" "	"	Astringent in decoction,	2 to 1 drachm,	Cort.
" "	"	" " "		Pulv.
<i>Rhus glabra</i> ,	Sumach,	Astringent, infusion a cooling refrigerant drink in		
<i>Rubus villosus</i> , or <i>rubus</i>		fevers, for gargles,		Berries,
<i>trivialis</i> ,	Blackberry, or dewberry	Tonic, astringent; in decoction,	1 to 2 fl. ozs.	Rad.
Do. do.	Do.	" " "	1 fl. drachm,	Comp. syr.
<i>Sabbatia angularis</i> ,	American centaury	" in infusion,	2 fl. ozs.	Herb.
<i>Salix alba</i> ,	White willow,	" astringent; in decoction,	2 fl. ozs.	Cort.
<i>Salvia</i> ,	Sage,	" " for gargles, &c.,		Fol.
<i>Sanguinaria canadensis</i> ,	Puccoon or blood root,	Stim. expectorant, alterative,	1 fl. drachm,	Tinct.
<i>Sarsaparilla</i> ,	Sarsaparilla,	Alterative,	1 fl. drachm,	Fl. ext.
<i>Sesamum indicum</i> ,	Bene plant,	Demulcent; in infusion,	Ad libitum,	Fol.
<i>Solanum dulcamara</i> ,	Bitter sweet, or woody			
" "	nightshade,	Narcotic, alterative; in decoction,	2 fl. ozs.	Herb.
" "	Do. do.	" " "	5 to 10 grs.	Solid ext.
<i>Spigelia marilandica</i> ,	Pinkroot,	Antihelmintic,	1 fl. oz.	Co. fl. ext.
<i>Spiraea tomentosa</i> ,	Hardhack,	Tonic, astringent,	5 to 15 grs.	Solid ext.
<i>Statice caroliniana</i> ,	Marsh rosemary,	Astringent; in cold infusion,		Rad.
<i>Stillingia sylvatica</i> ,	Queen's root,	Alterative; in decoction,	1 to 2 fl. ozs.	"
" "	"	" " "	1 fl. drachm,	Tinct.
<i>Symplocarpus foetidus</i> ,	Skunk cabbage,	Antispasmodic, narcotic, expectorant,	10 to 20 grs.	Pulv.
<i>Tricostemum perfoliatum</i> ,	Fever root,	Cathartic,	10 to 20 grs.	Solid ext.
<i>Ulmus</i> ,	Elm,	Demulcent; in infusion,	Ad libitum,	Cort.
" "	"	" " "	"	Pulv.
<i>Uva ursi</i> ,	Bear berry,	Astringent, tonic, with direction to urinary organs;	1 to 2 fl. ozs.	Fol.
		in decoction,		
<i>Veratrum viride</i> ,	American Hellebore,	Sedative, expectorant; to be used with caution,	4 to 8 drops,	N'wood's tinct.

ORIGINAL ABSTRACTS AND SELECTIONS.

On the Superiority of Chopart's Operation and Excision of the Ankle in all Cases Admitting of their Performance. By HENRY HANCOCK, Esq., F. R. C. S., Surgeon to Charing-Cross Hospital.

It is not my intention to discuss the propriety of resecting joints, experience having long since settled this question in the affirmative; but I would inquire whether what has usually been called "conservative" surgery has progressed equally in the region of the foot and ankle-joints as in other parts of the body, and whether improvement has kept pace here with that which has obtained elsewhere.

Connected with this subject, there is no one in the United Kingdom to whom we are more indebted than to Mr. Syme, who, in the year 1843, first introduced to the profession his celebrated operation of exarticulation of the foot at the ankle-joint. Since that period, down to the end of the Crimean war, when Pirogoff promulgated his modification, Mr Syme's operation remained in the ascendant, as Chopart's valuable

method was not supported, and the choice consequently remained between amputation of the leg and Syme's operation, which he describes as follows:

"The incisions across the instep and foot should be curved, with the convexity forwards, and exactly opposite each other. A line drawn round the foot midway between the head of the fifth metatarsal bone and the malleolus externus will show their extent anteriorly, and they should meet a little way further back, opposite the malleolar projections of the tibia and fibula. Care should be taken to avoid cutting the posterior tibial artery before it divides into the plantar branches. The flaps thus formed are next separated from their subjacent connexions, which is easily effected except at the heel, where the firmness of texture occasions difficulty. The disarticulation being then readily completed, if the ankle-joint be sound, the malleolar processes should be removed by cutting pliers; but if the articular surfaces of the tibia and fibula be diseased, a thin slice of these bones should be sawn off. The flaps are then brought together by means of sutures, preserving the pad of soft parts of the heel to form at the same time a covering for the end of the bones and a cushion whereon the patient could walk."

Great as was the acknowledged improvement of this opera-

tion over the old plan of amputation, it would seem to be open to objections. The irregularities of the protuberance of the os calcis, the intimacy with which the soft parts adhere thereto, and their comparative thinness at this point, render their detachment a matter of considerable difficulty, and they have not unfrequently been wounded in the attempt. Sloughing of the flap has followed in some instances, and among others in some of the earlier operations by Mr. Syme himself; but in the *Monthly Journal of Medical Science*, 1862, he states that he had performed the operation fifty times without this accident occurring.

To obviate these objections, M. Pirogoff, in the year 1852, introduced his modification, now known as "Pirogoff's operation." This differs from that of Syme, inasmuch as the posterior flap is not formed solely by soft parts, but consists of the posterior tuberosity of the os calcis with the insertion of the tendo-achillis. This flap is turned forwards, and the sawn surface of the os calcis brought in apposition with the cut surface of the tibia. The advantages claimed for this method are—that the tendo-achillis is not divided; that the soft parts not being detached from the tuberosity of the os calcis, the difficulties of this part of Syme's operation—the danger of wounding the flap and its subsequent sloughing—are thus avoided; that, from the posterior flap being, as it were, solid and not cupped, accumulations of pus are not likely to form in that situation; and lastly, that the leg is an inch and a half longer, from the posterior tuberosity of the os calcis left in the flap becoming united to the end of the tibia and fibula, thus lengthening the limb to that extent, and serving the patient as the point of support.

This operation, however, is liable to be followed by suppuration in the sheaths and sloughing of the divided tendons; and although this, to a certain extent, may be obviated by well-directed pressure, it is nevertheless a point of the greatest importance in governing our selection between the two operations. In February, 1858, Mr. Croft published in the *Lancet* the result of six cases of Pirogoff's operation—viz: four recoveries, two deaths; and it is well worthy of attention that whilst one patient died of granular disease of the kidney, the other died of secondary deposits of pus in various joints; and in all the four successful examples there was suppuration along the tendons of the leg.

There is still another and a very serious objection, however, which applies equally to both operations, and which should prevent our selecting them except in appropriate cases—viz: the necessary sacrifice of the foot and ankle-joint. But so great has been the prestige of these methods, so indiscriminately have they been employed, that we cannot read the hospital and other reports without feeling that the legitimate resources of surgery have not been made available to this region of the body, and I am sure that this feeling will not be confined to myself when it is learned that of forty-four cases submitted to Syme's and Pirogoff's operations which I have collected from various sources, in fifteen, or one third, the disease is stated to have been limited to the ankle-joint.

This has arisen partly from prejudice against Chopart's operation, and partly from the mistaken notion that excision of the ankle-joint is so difficult of performance and so hazardous that its adoption is scarcely safe or justifiable. The prejudices against Chopart's method, depending partly upon theoretical objection and partly upon error in the mode of performance, have prevailed, and a most valuable operation has consequently fallen into neglect. So, in like manner, resection of the knee, hips, elbow and shoulder-joints has frequently been performed; but we look in vain for resection of the ankle-joint, so completely have the minds of surgeons been engrossed by these imaginary fears, and so entirely have

they ignored the value of the foot, or a portion of the foot, as a part of the animal economy.

The objection, however, made against Chopart's operation is, that the extensor muscles of the ankle having lost their opposing forces, and acting through the tendo-achillis, draw up the heel, and direct the cicatrix towards the ground, whereby the patient, obliged to bear his weight upon the tender cicatrix, is prevented walking by the agony induced, and suffers so much that he willingly undergoes secondary amputation. Mr. Syme, who performed secondary amputation at the ankle-joint in three cases, remarks: "You will observe that, as in all other cases of the same kind, ankylosis has taken place between the astragalus and calcis, whilst the latter has been previously drawn up by the action of the gastrocnemius, so as to prevent the patient from resting on the proper part of the stump."

In other cases, again, ulceration and exfoliation of the bone have occurred from tension of the flaps, necessitating the same untoward results.

Instances are also recorded in which, after this contraction had taken place, the tendo-achillis was divided, in the hope of remedying the mischief, but with so little success that Syme's operation was subsequently performed. Mr. Fergusson relates a case of this character.

Nevertheless, I still advocate Chopart's operation wherever the disease is located anteriorly to the os calcis and astragalus, and where an adequate flap can be obtained. I have now performed this operation four times, with the best results, and I attribute this success to the following mode of proceeding:

Making the upper flap at least an inch long, and carrying the under or plantar flap well on to the under surface of the toes, whereby, when there is much thickening, very nearly an additional inch is gained in that direction, and the junction of the flap is brought to the centre of the stump instead of the upper margin, to which the principal stress is referred. The flaps, moreover, being full and free, danger of sloughing is avoided; whilst, if required, they provide a sufficient covering for the whole or a portion of the navicular bone, which, when possible, should always be preserved, as by this means we not only obviate the necessity of opening into the large synovial cavity of the astragalo-navicular joint, but we at the same time preserve the attachment of the calcaneo-seaphoid ligament, and consequently the natural and firm support to the head of the astragalus, whilst we also make the stump more full and even. Again dividing the tendo-achillis at the time of operation, and not waiting to do so until contraction has already taken place, when such division is useless, as the parts have now become adherent and fixed, and it is too late to remedy the mischief.

The success, moreover, is greatly influenced by the situation at which the tendon is divided. When this is done near to the os calcis, where the fascia extending from the tendo-achillis on either side to the malleoli is dense and strong, and where the inability of the patient to rest his heel or foot on the ground during the antecedent disease has already induced a considerable amount of contraction, the consequent separation of the divided tendon is so slight that it quickly reunites, and the result is not to be relied upon. I always, therefore, select a point as near to the body of the muscle as practicable, where the fascia is less dense, and where the tendon is more under the influence of the muscular fibres?

Chopart's operation, performed in accordance with these suggestions, will prove as successful as any in surgery, and in support of this assertion I would refer to a case which made an excellent recovery, and left the hospital cured in two months.

I have frequently seen this patient since. He is now quite well, and able to walk and run up ladders as well (he says)

as ever he did. The plantar surface of the stump is perfectly horizontal, and the heel rests properly on the ground in standing or walking. Having had an artificial front of cork made to the stump, he wears a common boot, and sometimes walks several miles in the course of the day.

My other cases have been equally successful.

Excision of the Ankle-Joint.—I have now excised the ankle-joint in five cases; four times successfully, once unsuccessfully, the patient dying seven months after the operation of pthisis, induced by dissipation. My colleague, Mr. Bauvell, has also performed the operation. When we consider what has been done of late years in the surgery of other joints, when we also consider how much we may add to the comfort of, and what substantial benefits we may confer upon the patient by this operation, we may fairly inquire why a solitary exception is made in the case of the ankle-joint, and why the foot is so frequently and so unnecessarily sacrificed. Are the difficulties of this operation greater than those of Syme and Pirogoff, and is it more hazardous to the patient?

A very exaggerated notion would seem to exist upon this point. Even Mr. Fergusson, in his "Practical Surgery," says: "Under any circumstances I should consider such operations extremely difficult, and in most instances more dangerous to the patients than amputation at the ankle or leg. When such an opinion is expressed by so eminent a surgeon, it is not surprising that the operation should be regarded with disfavour; but I confess I do not understand in what this extreme difficulty or this great danger consists. When performed in the following manner, it is neither more difficult nor more dangerous than the generality of operations in surgery:

Commence the incision about two inches above and behind the external malleolus, and carry it across the instep to about two inches above and behind the internal malleolus. This incision is merely to divide the skin, and should not on any account penetrate beyond the fascia. Reflect this flap; next dislodge the peronei tendons from the groove at the back of the external malleolus, and cut through the external lateral ligaments of the joint, carrying the knife close to the edge of the bone. Having done this, cut through the fibula with the bone nippers, about an inch above the malleolus; remove this piece of bone by dividing the inferior tibio-fibular ligament, and then turn the leg with the foot on to its outer side. Now carefully dissect the tendons of the tibialis posterior and flexor communis digitorum from behind the internal malleolus, and, keeping the knife close around the edge of this process, detach the internal lateral ligament; then, grasping the heel with one hand and the front of the foot with the other, forcibly turn the sole of the foot outwards, by which the lower end of the tibia is dislocated and protruded through the wound. This done, cut off the end of the tibia with the common amputating saw, and then, with a small, thin metacarpal saw, introduced between the tendo-achillis and the upper articulating surface of the astragalus, remove the latter by cutting horizontally from behind forwards. Replace the parts *in situ*, close the wound carefully in front of the ankle, but leave the sides open to allow the discharge a free exit; apply water dressing, place the limb on a T splint, and the operation is completed.

There are no vessels divided in this operation, and, for obvious reasons, the greatest care should be taken not to wound either the anterior or the posterior tibial arteries.

I have already alluded to the risk attending Pirogoff's operation of subsequent suppuration in the sheaths of the divided tendons and sloughing of the latter, as exemplified by the six cases published by Mr. Croft. Regarding this point, Pirogoff says: "I fear nothing so much as this—viz: when the body of the muscle contracts and draws up the tendon,

divided or half destroyed by suppuration, out of the sheath." Neither is Syme's operation free from this risk. In the two cases related by Butcher, one had a succession of secondary abscesses, the other had pyæmia, and was only saved by the skill and energy of this distinguished surgeon; whilst Mr. Fergusson remarks: "What with the violent inflammation extending up the leg, sloughing, secondary hemorrhage, death immediately dependent upon the operation, tardy healing of the wound, and defective condition of the stump, from languor of circulation and tenderness, so that it could not be pressed upon or made useful, I have formed a most unfavorable impression against it."

Excision of the ankle-joint is, for the most part, free from these defects. The nerves and arteries being preserved intact, sloughing does not occur; whilst the non-division of the tendons, and more especially the non-interference with the extensive sheath of the tendons in front of the joint, exempt the patient from the danger of suppuration in the sheaths and sloughing of the tendons, as well as from that danger of which Pirogoff seems to have so lively a dread.

In neither of my own cases has there been any sign of sloughing of the tendons or suppuration in their course, or of anything approaching to pyæmia. In one or two there was slight inflammation of the lymphatics, which subsided in a few days; and the amount of discharge has certainly not been more than, if so much as, what commonly follows excision of the knee-joint.

Cases in which the disease is situated mainly in the articulation, between the astragalus and os calcis, are not unfavorable for this operation. In my fourth case this complication existed. I removed the whole of the astragalus, behind its neck, and the diseased portion of the os calcis, and the child made a perfect recovery.

But if we meddle with the ankle-joint at all, never mind how limited the disease may be, we should always excise the entire joint, and not a portion merely; gouging can rarely succeed completely in removing the disease, and in addition inflicts an injurious amount of bruising.

In partial resections we expose our patients to the danger attending wounds of joints, whilst by complete excision the joint structure is got rid of, bone is brought in direct contact with bone, and the process of cure is rendered more simple and more certain. Besides total excision of the joint enables us to employ the saw, which should always be used where practicable, in preference to the gouge. We thereby obtain even surfaces, we bruise the parts less, and we are also enabled to form an opinion as to the soundness of the bones themselves.

Of the 5 patients upon whom I have operated for excision of the ankle-joint, 1 died seven months after the operation from pthisis; whilst of 33 cases collated from various sources I find that 21, or two-thirds recovered absolutely, 7 suffered secondary amputation, and 5 died; but of these three are stated to have died of pthisis, one seven months, one three, and the third eight days after the operation. If the account of the two latter be correct, it might perhaps have been more judicious if the operation had not been performed at all. As regards the 7 secondary amputations, in 4 the joint was not entirely excised, but portions were allowed to remain.

Lastly, does excision of the ankle-joint afford as useful a limb to the working man as either Syme's or Pirogoff's operation? or does the removal of the malleoli and the subsequent destruction of the mortice-joint so weaken the part and so predispose it to secondary mischief as to render the foot an incumbrance rather than a benefit? In the first case upon which I operated the boy played at leap-frog within twelve months after the operation; there was very slight shortening of the limb—not more than a moderate addition to the sole of

his boot could rectify. In the second, performed upon a man aged twenty-five, I frequently see him walking up the steep hill to Hampstead (a great strain even upon a sound ankle-joint) apparently with great ease. Whilst in the last case, which has just left the hospital, the boy walks about without difficulty. It is true that, as a matter of precaution, I have advised artificial support, in the shape of upright springs inserted on either side of the boot.

But what takes place in Pirogoff's operation occurs equally in this: there is either an ingrowing of bone into bone, of the tibia into the astragalus or calcis, or so dense a ligamentous union as at once to afford the requisite strength and a certain amount of motion in the part.

INTERESTING ANALYSES OF ARTICLES IN FOREIGN JOURNALS.

Surgical Experience at St. Bartholomew's. By FREDERICK SKEY, Esq., F. R. S.

Bursa.

The bursa in front of the knee joint is situated partly on the lower half of the patella, and partly on the tendon of the quadriceps muscle, commonly called the ligamentum patellæ. When diseased, it exhibits the following characters: It may be small or large in size, varying from that of the half of a small apple to the size and form of a large orange. The swelling may be hard or soft, composed of thick walls of lymph, with a small central cavity, forming a mere cleft or fissure, or more commonly consisting of the bursa dilated by a collection of serum or pus. It may be active and painful, or chronic and painless. In both cases it is an evil and an inconvenience, and demands the best resources of surgery for its cure. The subjects of this disease, on applying for hospital relief, state themselves to have been under treatment for weeks or even months. The treatment in question resolves itself in two varieties: 1st, by the repeated application of blisters; 2d, by that of tincture of iodine. Both are inoperative, for at the expiration of many weeks the disease triumphs. All the above varieties of bursal disease are readily amenable to the influence of a moderately thick silk thread passed through them. The effect of the thread is the destruction of the bursa, whether composed of solid walls or fluid contents, and the formation of an abscess. The period required for this conversion varies from three to ten or twelve days. The presence or the immediate advent of matter is indicated by pain in the swelling and by the existence of a red halo around the openings made by the needle. When this sign is fully established, the thread may be withdrawn. The bursa is now and forever obliterated, and we have an abscess in its place, identical with, and amenable to the same treatment as an abscess in any other place.

Burns.

In the treatment of burns I have had some experience. Every year confirms my conviction of the soundness of the principle first proclaimed to our profession by Dr. Kentish, of Bristol, about half a century ago—a principle approved, accepted, and all but universally adopted for twenty years and upwards. That principle consisted in the application of stimulants in one or other form as early as possible after the receipt of the injury. Although less popular in 1863, it is not less sound. How many hospital surgeons have subjected these painful accidents to the test of critical inquiry and experiment? How many can truly affirm, "I have fairly tried the two methods of treatment, and I adopt the Carron-oil system? Of the two systems of treatment which consist of medical or other agents, the one adopts the principle of stimulation, the other soothes. The idea of soothing an irritated surface is indeed plausible. To soothe signifies to allay, to calm. What is the agent employed for this purpose—almost universally employed? Carron

oil. Ask a man the subject of a burn what amount of relief from suffering he obtains from the application of Carron oil at the expiration of any term from one hour to forty-eight. I believe it neither affords relief, nor answers any useful purpose whatever. Its employment is little better than a delusion. Yet it is the almost universal agent used in the coal and iron districts, in which injuries by fire are so frequent and so fatal. The reason why it is so universally employed in these districts may be inferred from the following anecdote: Some years since, while on a visit near the iron works of Dowlais and Merthyr Tydvil, where many thousand men were engaged, I witnessed sundry cases of severe burns; and on my urging on the resident surgeon the value of the opposite principle to that which he adopted in the treatment, he replied to this effect: "If I were to attempt to invade the prejudices of these men, and insist on a change of treatment, my life would hardly be safe from their violence." This is indeed valuable testimony. A very common fact in every-day life displays the value of the treatment by stimulants. The smarting pain caused by a burn or scald on the hand is relieved, and, if not very severe, is almost removed, by subjecting the hand to the influence of the heat of a fire. The closer it is held—the more severe the pain caused by the undue heat, the greater is the amount of permanent relief. What is the theory of this? I cannot pretend to give a satisfactory explanation of the phenomenon, but it is not the less true. It is palpable to ordinary observation that if we stimulate a burnt region of the body, or, in other words, if we increase the pain of the part by the application of any agent—as heat, whether from fire or hot water; or if we stimulate by the agency of turpentine, as recommended by Dr. Kentish, or spirit or stimulant of any description—we relieve the affected part from its pain, and carry it forwards by a rapid stride towards recovery. The greater pain deadens the lesser, and not for the hour merely, but permanently. And what is true in principle on the smaller scale is equally true on the larger. Of stimulants, I know no agent so efficient as a solution of nitrate of silver, which I have for some years employed in the proportion of from ten to fifteen grains to an ounce of water for an adult, and from five to seven grains for a child. This solution applied freely over the burnt surface is followed by the application of cotton wool. In an hour or less the pain decreases, and ere long subsides. I could illustrate the efficacy of this treatment by an endless number of examples, but I will mention one only. Five men were severely burnt by an explosion of gas, and were brought to the hospital. One died immediately; the remaining four were badly burnt about the face, chest and arms. The face and chest of each man was washed with a solution of ten grains of nitrate of silver; to the arms the celebrated Carron or boiled oil was applied. Twenty-four hours elapsed, and on inquiry whether the patients were suffering pain, each made the same reply: "I am easy everywhere, except in the arms and hands." The oil was removed, the solution was applied, and relief followed immediately. The solution may be profitably applied at any period, so long as the pain remains.

On the younger members of our profession I most strongly urge the value of the stimulating principle in the treatment of burns and scalds of every description, not only for the relief from suffering which it affords, but for the influence it exerts in abridging the duration of the consequences of the injury and promoting an early recovery. The only exceptions to this benefit are found in the cases of very severe injury which are attended by great destruction of the tissues of the affected parts; but even in such cases relief from pain is always afforded by the application of the solution in or about the strength I have mentioned.

PERSEVERANCE.—The chair of Surgery of the Faculty of Turin was lately competed for by Messrs. Pacchiotti and Bottini. The former beat his adversary and obtained the professorship, for which he had competed five times previously.

On Vaginal Lithotomy.

Dr. Aveling read before the Obstetrical Society of London a paper reciting the particulars of thirty-five cases in which this operation had been performed—twelve British and twenty-two foreign. The author also gave another case, in which he divided the vesico-vaginal septum, and extracted a small rough stone. The wound was brought together with silver-wire sutures. Gilt beads were passed over the ends of these and run down to the lips of the wound. These were kept in position by a perforated shot, also passed over the end of the sutures and tightened upon them by a pair of forceps. He proposes in future to use a coil, made by winding a piece of the suture-wire round a pin, instead of the beads. The wound healed in a week, and the patient returned to her home in a fortnight.

Mr. Spencer Wells congratulated Dr. Aveling upon the successful result of his interesting case, and heartily concurred in the tribute he had paid to Dr. Marion Sims. But he (Mr. Wells) had begun to doubt whether the success which had followed the operation for vesico-vaginal fistula of late years was so much due to the use of wire sutures as to the improvements which Dr. Sims had originated in the mode of bringing the fistula into view, accurately paring the edges, and bringing them into perfect opposition. Provided the edges of a fistula were thoroughly pared and kept in close apposition, it was probably of little importance how this was done. A year ago he (Mr. Wells) was as strongly in favor of metallic sutures as anybody, but latterly a wider experience had taught him that it is only after five or six days that wires show any advantage over silk, and before that time the sutures ought to be removed. Then silk offers the great advantages over wire of being more easily applied, of not requiring so large a needle to pass it, of the ends being much less irritating, and of being more easily removed. After many comparative trials of different parts of the same wound with wires of silver, iron, lead, platinum, and aluminum, with fine catgut, horsehair, telegraph wire, india-rubber thread, and and the fine strong silk known as "Chinese twist," he had become convinced that wires offered no advantage over silk, while silk offered many advantages over every other material used for sutures. In a recent case he had closed a vesico-vaginal fistula by five silk sutures, and perfect union resulted, although no catheter was used. The supposed necessity for the use of the catheter after closing vaginal fistula was another error which time was correcting. The urine is by no means so irritating a fluid as some believe. The lower orders use it as a lotion to the eyes and to sore legs, and it certainly cannot differ much from the dilute saline solutions constantly prescribed as astringents or stimulants. The use of the catheter is the most troublesome part of the after-treatment, and often most distressing to the patient. One of his patients really could not bear it, yet she did perfectly well; and lately he had not used it at all, union taking place quite as well as when it was used, and the patient being much more comfortable. With regard to stone in the bladder during labor being a cause of vesico-vaginal fistula, he had once removed in the Samaritan Hospital a larger stone through a fistula before closing it, but it was very questionable whether it could often be necessary to remove a calculus through the vagina when no fistula existed, or to run the risk of making a fistula to remove a stone. Lithotomy was very easily performed in women; and large fragments of stone passed readily through the short female urethra, so that no form of lithotomy could often be called for. Simple dilatation of the urethra was not likely to answer in any case not suitable for lithotomy, and its effects are very uncertain—a large stone might be removed and no incontinence follow, but incontinence might follow removal of a very small calculus. The usual aid to dilatation by incising the urethra was still worse. A surgeon of very large experience had

told him that he had done it for two adults and seven children, and "they were all dribblers." Where from some exceptional condition of bladder and stone, lithotomy was inappropriate, vaginal lithotomy might, therefore, become a valuable operation; but experience was still wanting to show that it was better than, or as good as, the lateral operation so successfully practised by Dr. Buchanan, of Glasgow.

Relative Rank of Medical Officers in the British Service.

Her Majesty has been graciously pleased to direct, by her order in Council, dated April 16th, 1861, that the relative rank of Medical Officers in the Navy and Army shall, in future, be as follows:

1. Inspector-General of Hospitals and Fleets, after three years' service, on full pay as such, to rank with Major-General, according to the date of the completion of the said three years' service.
2. Inspector-General of Hospitals and Fleets, under three years' service, on full pay as such, to rank as Brigadier-General, according to the date of commission.
3. Deputy Inspector-General of Hospitals and Fleets, after five years' service, on full pay as such, to rank with Colonel, according to the date of the completion of the said five years' service.
4. Deputy Inspector-General of Hospitals and Fleets, under five years' service, on full pay as such, to rank as Lieutenant-Colonel, according to the date of the commission.
5. Staff-Surgeon, to rank with Lieutenant-Colonel, but junior of that rank.
6. Surgeon, to rank with Major, according to the date of commission.
7. Assistant-Surgeon, after six years' service, on full pay as such, to rank with Captain, according to the date of the completion of the said six years' service.
8. Assistant-Surgeon, under six years' service, on full pay as such, to rank with Lieutenant, according to the date of commission.

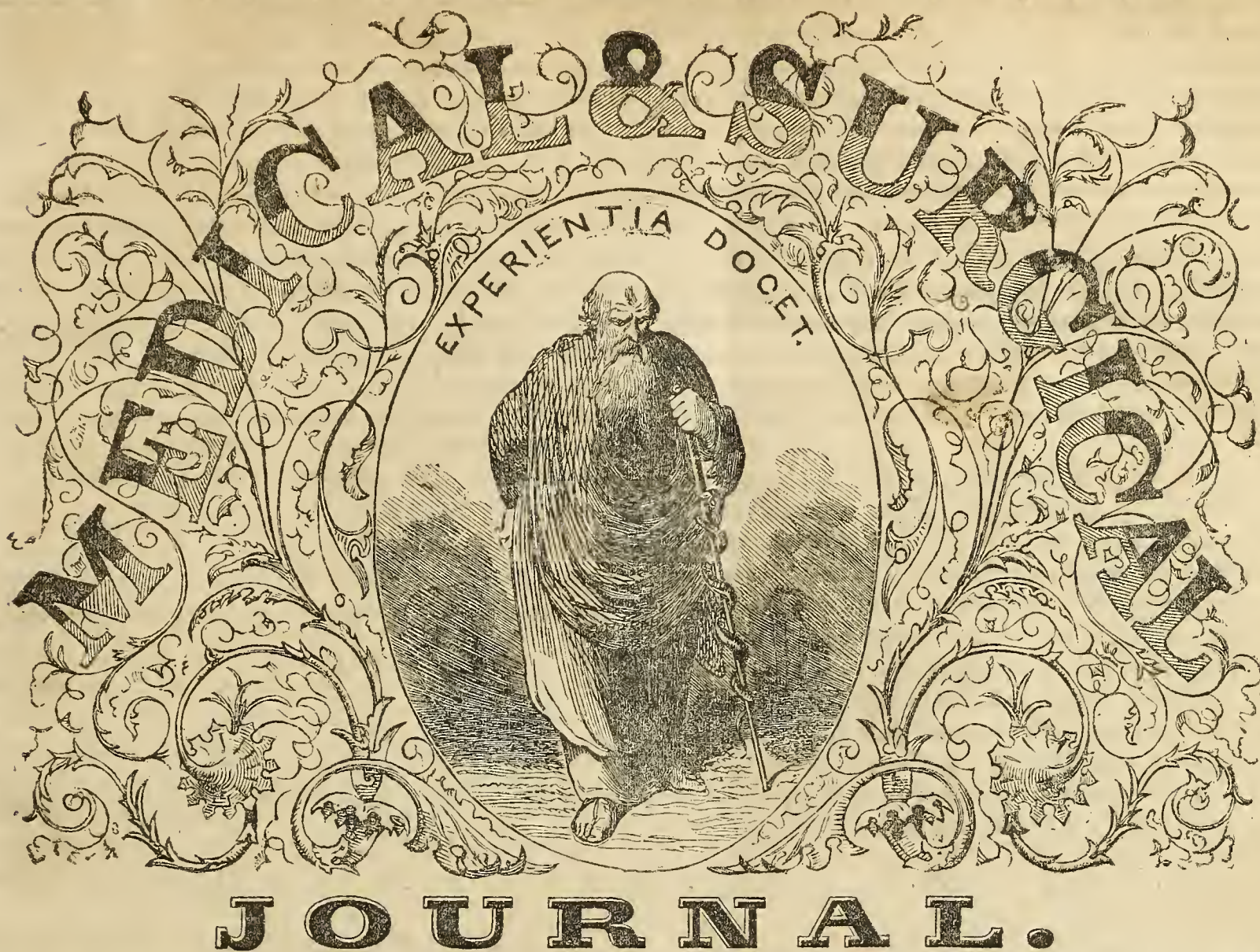
By command of their Lordships,

C. PAGET.

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CONFEDERATE STATES



VOL. I.

RICHMOND, AUGUST, 1864.

No. 8.

ORIGINAL COMMUNICATIONS.

ART. I.—*Epidemic Cerebro-Spinal Meningitis.* By Surg'n
G. A. MOSES, Mobile, Alabama.

During my connection with the army my attention has been at various times attracted by a disease which had hitherto never come under my observation. It is that type of cerebral disease, known as cerebro-spinal meningitis. It occurred, I believe, at Bowling Green, during the winter of 1861-'62. In the succeeding winter, while the army in the West was at Grenada, Miss., this disease made its appearance among the negroes employed upon the fortifications, and also among plantation hands in several adjoining counties. Again, during the past winter, I have observed it at this place, almost entirely confined to the blacks, both those employed by Government and others. Some cases have occurred among the citizens, principally in children.

The disease is marked by its rapid course, and fearfully frequent fatal termination. I have heard of but five reported recoveries, and have seen none.

* The first account I find, of a disease resembling this,

* Vide. History of Epidemic Cerebro-Spinal Meningitis. Bibliothèque du Médecin Practicien. Vol. IX.

but unnamed, dates in the year 1310, when it appeared in France; it is not again mentioned until 1503. A disease almost similar appeared in 1510 and 1517; after a very severe winter (1553) in Sillesia, it carried off large numbers of the population. In 1580, associated, as now, with catarrhal affections, it killed no less than 10,000 persons in Rome, 12,000 in Madrid, and proportionately large numbers in other cities. During the civil wars in France, 1616, Ozenaur says, "The armies, both Catholic and Protestant, are decimated by a new disease," the subjects being attacked by "sudden and furious pain in the head." It lasted more than three months, and but few were saved. Sydenham reports it in 1661 and '64, as selecting the young and most robust subjects—as partaking of the type of typhus. In 1788, during an epidemic of typhus in Lyle, a disease appeared more nearly approaching to the character of the present epidemic. It was accompanied with tetanic convulsions and coma, the pia mater being chiefly involved. Not until 1830 was any name given this disease, when closer examination more fully indicated its seat and nature. Of late years it has occurred in many portions of the Confederacy. No sufficient cause has yet been assigned for its appearance or cessation.

M. Tourdes, in his valuable paper, has published statistics of attributable causes, and assigns the abuse of alcoholic

stimulants as the chief—but of 136 cases quoted, in 100 cases the cause is “unknown.” As it has occurred in the army, it cannot be attributed to alcohol, as amongst its victims this stimulant could but rarely be obtained. It appears generally, if not invariably, during cold, wet winters, along with severe types of pulmonary complaints, and passes through the stages of all serous inflammations.

It is remarkable for the suddenness of its declaration, its rapid development and termination. The subjects, generally the young and most robust, are to all appearance in good health; a chill, or pain in the head, first attracts attention; in a very few hours the patient grows stupid, pain in the head appears to concentrate about the base, the neck becomes stiff, pains are felt in the extremities, or in the abdomen. These signs increase until the muscles of the neck and back become rapidly contracted, giving almost, opisthotonos; the smallest movement of a finger or toe is attended with intense pain; the pupil of one or both eyes is dilated or inactive, or their action is reversed; coma occurs, often trismus; the tongue, until now moist and normal in color, or, as is more usual, covered with a whitish fur, becomes dry, hard and swollen; bowels obstinately constipated, pulse small and slow, respiration labored, profuse diaphoresis, and in a short time death closes the scene—or the patient may have an intermission of the severe symptoms for twelve or twenty-four hours, the physician may hope, until suddenly a relapse takes place, with fatal ending.

Treatment has been of but little benefit—everything has been recommended and tried with poor success. *M. Rollet* advised general blood-letting, leeches and cups to length of spinal column, or actual cauterization, with sinapisms and blisters of ammonia covering the whole body. *Grissolle*, in addition, recommends mercury, *Ganssach* trusts to quinia, *Chauffard* to opium in large doses. They all lost from sixty to eighty per cent. of the cases. After the disease has progressed to the extent it may in four or six hours, no medicine appears to act, croton oil failing to move the bowels to action.

The first symptom of the disease which attracts attention, appears generally to indicate not the commencement of disease, but its maturity, as in those cases which die in from ten to fifteen hours, with large effusion of lymph in the pia mater. Insidiously in approach, it declares itself at a time when interference is of no avail.

I am indebted to Dr. S. C. Young, P. A. C. S., for information regarding the course of this disease at Grenada, Miss. Of thirty-five cases which came under his observation, he knows of no recovery; one was apparently improving, when, at the end of the third week, he was taken from the hospital. Some of the cases under his charge lived twelve and fifteen days, even longer. He thinks mercurials and stimulants promise the most success. Theory would seem to approve his opinion, but the great difficulty is to bring the patient under the influence of the remedy. The disease, as it has appeared in hospital here, runs its course with more uniform rapidity than it has before done, no case having lived through the fifth day. Like cholera and yellow fever, this epidemic appears to

depend on a specific poison, excited by certain changes in the atmosphere. Experience has not advanced our knowledge of the real cause or treatment of this most fatal disease. Selecting as it does the hardiest subjects, in the flush of strength and life, it baffles all our skill.

The accompanying notes in several cases, which are types of all the others, will sufficiently exhibit the symptoms, treatment, termination and pathological appearances. The only change in the blood is an increase of fibrine. The cerebellum is more often and seriously affected than the cerebrum, being sometimes softened in its superficies, while the internal portion has a reddened appearance, the puncta vasculora seeming larger and more numerous. This I judge to be a secondary complication. The pia mater is the membrane in which the disease finds its origin, and generally exhausts its course.

Notes of Cases.

Case No. 1, March 24th.—Alek, slave, aged about twenty-five years, entered hospital at 10, A. M.; has felt unwell since yesterday; quit work in evening. This morning condition as follows: Pulse 64, soft, compressible and small; tongue moist, of good color, excepting a little whitish fur in centre; countenance, natural; temperature of skin, pleasant; left lung congested, a little crepitus; some rigidity of posterior cervical muscles; bowels constipated. Prescribed hydrag. c. mit.; pulv. jalapae aa. 10 gr.; wet cup chest; cold douche to head, to be applied continuously for half an hour, and intermitted for same length of time, and so alternately during day; whiskey, 1 drachm every half hour as long as necessary to produce effect. 5 P. M.—Pulse 80, very irregular, soft and quick; respiration 28; has been noisily delirious, and difficult to restrain in bed, since 1 P. M.; pupils largely dilated and inactive; passing urine involuntarily; spit out purgative this morning; skin of natural heat; cries, as though suffering. Continued whiskey and douche. March 25th, 9 A. M.—Pulse 94, small, soft and regular; respiration quiet and easy, at 28; pupils contracted to very small size and inactive; deep coma; left side of face warm, right side cool. Body and extremities warm; diaphoresis; tongue dry. Continued whiskey as often as could be administered. 4 P. M.—Pulse 110, fuller and soft; left pupil acting a little less promptly than normally; right pupil still contracted and motionless; face and skin same as this morning—not so much perspiration. Continued whiskey. 6 P. M.—No change, except that respiration is somewhat quicker. March 26—Died at 6½, A. M.; autopsy at 4, P. M.; body still unusually warm, although weather is cold; dura mater healthy; upon taking this off, the arachnoid is seen transparent, except when underlaid by lymph deposit; blood vessels much congested and very tortuous; each vessel carries in its track lymph, more anteriorly than posteriorly; base of brain a mass of lymph, with some pus about the optic commissure across and around the pons varolii and medulla oblongata: arachnoid in some places bound down by bands of lymph; the deposit enters the convolutions, along with pia mater; lateral ventri-

cles contain turbid serum, with flakes of lymph; spinal cord posteriorly, covered with same lymph deposit.

Case No. 2, March 10th.—Henry, slave, age 25, entered hospital, March 9th, 9, P. M. Complained from the first of pain in the head, so intense that he constantly emitted cries and groans; pulse weak, at about 90; tongue moist and white; bowels active; pupils slow to act; had a chill before entering hospital. March 11th.—Pain increased; no change otherwise; is taking 5 grains iodide potash every hour. 12, A. M.—So noisy that he was moved to a detached room; seems to be suffering intensely; still conscious, but no answers can be elicited. 4, P. M.—Pulse somewhat increased in frequency; tongue dry; pupils dilated and almost inactive; coma commencing. 13th, 10, A. M.—Completely comatose; skin moist and cool; perfectly quiet; lying on the back for the first time; muscles of neck rather stiff; scalp blistered last night and stimulants administered; pulse slow and feeble. March 14th.—Died at 4, A. M.: autopsy at 10; usual appearance of congestion and lymph deposit between arachnoid and pia mater; pacchionian bodies enlarged; large deposit of lymph and pus at base of brain, especially over pons varolii and medulla oblongata; substance of cerebellum reddened and slightly softened superficially.

Case No. 3, March 19th, 5, P. M.—John, slave, age 28, has been sick for two days, before entering hospital, with diarrhoea; operations large and frequent; has taken three grains of opium. March 20th, 9 A. M.—Bowels quiet, and moved since last evening; pulse 148, small and soft; temperature of skin natural; inclined to be stupid; tongue dry and covered in centre with a white fur; pupils much contracted and motionless; complains of pain in head and neck, and in extremities, especially in superior; ordered whiskey, $\frac{1}{2}$ ounce, every hour. Died at half-past four this afternoon: autopsy —; dura mater, in several places near pacchionian bodies, adhered to subjacent membrane, so that in uncovering brain, portions of it were separated, leaving small, smooth irregular cavities, as of a slough; lymph deposit along course of blood-vessels, and posterior to optic commissure; no disease in spinal chord.

Case No. 4.—Reported by Assistant-Surgeon J. H. Purifoy, entered February 24th, with some symptoms of pneumonia, which endured for a day before signs of meningitis occurred, when the case took all the usual course, of the above mentioned cases, with one marked peculiarity. The pupils after being dilated, became much contracted, and *expanded upon the admission of light*. Death occurred on the fifth day. Post mortem examination revealed: enlargement and an appearance of red hepatization of the pituitary body, in addition to the usual deposition of lymph, with some pus. This case was treated throughout with quinine and stimulants, after bleeding by cups to the extent of ten ounces.

ART. II.—*Report of Surgical Cases in General Hospital, Fayetteville, North Carolina.* By BENJ. F. FESSENDEN, Surgeon-in-Charge.

John W. Gardener, age 25, private company "F," 24th North Carolina regiment, was wounded at the battle of Fredericksburg, on the 13th December, 1862, by a minie ball entering just above the pubes, passing through the bladder and out through the body of the ischium. He states that he remained two months at a private house in Fredericksburg, with little or no treatment, as the surgeon thought he could not survive the injury. He was then transferred to a hospital at Richmond, where he remained one week, and received a furlough for forty days to go to his home in this (Cumberland) county.

He was admitted into this hospital, November 1st, 1863. Symptoms of great vital depression existing; urine passing through the wounds made by the entrance and exit of the ball; bed sores; excoriations of back and thighs; constipation; loss of appetite; emaciation; the least movement of the body, or an action from the bowels would bring on intense agony.

My first care was to make the patient comfortable, to heal the bed-sores and excoriations: this was accomplished by arranging the bed with an opening lined with oilcloth to drain off the urine, thereby keeping him dry; the following wash to be applied to the excoriated surfaces; borax 2 drachms; tinct. opii $1\frac{1}{2}$ ounces; water 16 ounces; M. Ordered sulph. quinine 32 grains; tinct. chlor. ferri 3 drachms; aquæ 4 ounces; M. Teaspoonful to be given three times daily; brandy 1 oz. three times daily; generous diet. Under this treatment, the patient was rendered much more comfortable—excoriations healed, and appetite improved.

November 10th.—In consultation with Drs. Benjamin W. Robinson and T. D. Haigh, it was decided to examine the wounds and bladder as thoroughly as the present irritable and debilitated condition of the patient would admit. Complete anaesthesia was induced by inhalation of chloroform, a catheter was passed into the bladder, and the presence of a calculus recognized. To be thoroughly satisfied in regard to the diagnosis, the catheter was withdrawn and a sound introduced, which, when brought in contact with the foreign body, removed all doubt as to its nature—the sharp, clear sound of the stone was distinctly heard.

The urine gave a large amount of white deposit, which, upon examination, was found to be the phosphate of lime. To correct the calculous diathesis and improve the general health of the patient was, under existing circumstances, an object of much importance. With this view, was ordered full diet; brandy, 1 ounce after each meal; nitro muriatic acid, 6 gtt, three times daily, properly diluted with sweetened water; laxatives when required. With this treatment, the patient improved in general health, had a good appetite, and had gained flesh.

February 13th, 1864.—*Operation:* present, Drs. Benjamin W. Robinson, T. D. Haigh, J. McRae, H. A. McSwain, W. I. McDuffie, and R. A. Black. By invitation, Dr. Robinson operated. The patient being placed in the usual position and brought fully under the influence of chloroform, a deeply grooved staff was introduced and confided to an assistant. Then a crescentic incision, passing half an inch in front of the anus, divided the tissues intervening to the deep perineal fascia. Considerable hemorrhage from the left superficial

Calculus - this case, Rice.
14-1-1864

perineal artery occurred—not sufficiently troublesome, however, to require attention. An unusually deep perineum caused slight embarrassment in recognizing the position of the staff; but that point being assured, an opening through the fascia and into the membranous portion of the urethra, permitted the introduction to the groove of the beak of a double lithotome, which was passed into the bladder; staff removed, instrument reversed, and the section of the right and left lobes of the prostate, to the extent of ten lines in each, in the oblique diameter, quickly performed. The index finger of the left hand introduced, at once detected the presence of more than one stone, and guided the forceps with which calculi (to the number of four) of very considerable dimensions, were successively and without difficulty extracted. The largest of these weighed an ounce (Troy.) Aggregate weight $2\frac{7}{8}$ ounces.

Chemical composition: phosphate of lime.

The patient was put to bed; no unpleasant effects from the chloroform. Ordered tr. opii, 25 gtt., to be taken at bedtime.

February 14th.—Patient doing well; passed a comfortable night. February 15th.—Water passing through the wound made by the operation, has ceased to flow through the openings made by the ball. February 17th.—Examined urine; found it loaded with a deposit of the phosphate of lime. Ordered nitro muriatic acid, 6 gtt., three times daily; brandy, 1 ounce after each meal; a light, nutritious diet. February 18th to 20th.—Daily visits; patient gradually improving. February 27th.—Passed water by urethra for first time; back wound healed; a small quantity of urine passed by the wound above the pubes. February 28th.—Cauterized the fistulous opening above the pubes. March 9th.—Not entirely healed; was cauterized again. March 15th.—Wound in perineum nearly closed. March 18th.—Had a chill last night, with biliary derangement. Ordered hydr. chlor. mite, 10 grains; rhubarb, 10 grains, M., to be followed after its operation with 10 grains sulph. quinine. March 21st.—No return of chill; doing well. May 2d.—Patient much improved, appetite good, and has gained flesh; bowels regular; all the wounds healed except the one made by exit of the ball, from which there is a slight fistulous discharge, but no urine. The patient is now able to take out-door exercise, with the aid of a walking-cane.

NOTE.—Dr. R. who has operated repeatedly, both by the lateral and bi-lateral methods with invariable success, inclines to a preference of the latter, as he thinks it affords more facility of manipulation, and the cures are quite as quickly and perfectly attained.

William McNair, private company "E," 52d regiment N. C. troops, 33 years of age, fair complexion, medium size and spare habit, occupation before the war a farmer, was sent to this hospital, December 17th, 1863, on account of a tumor seated on the soft palate, just in front of the lateral half-arches, cone shape, not circumscribed or movable, but blended with the surrounding tissue, presenting a dark-red appearance, with a number of blood vessels ramifying pretty freely over its surface. The size of the tumor precluded possibility of the patient taking any nourishment, except in a fluid state. He states that it made its appearance about six years ago, that its growth had been gradual, accompanied occasionally with sharp,

darting pains, but generally a dull, aching sensation. Ordered sulph. quinine, 32 grains; tinct. chlor. ferri, 3 drachms; aqua, 4 ounces, M.—a teaspoonful to be taken three times daily. This treatment, in conjunction with a generous diet, was continued until February 2d, 1864, at which time his appetite was good, and general health much improved in every respect.

On consultation with Dr. James McRae, it was thought advisable to operate at once. From the vascular appearance of the tumor and the difficulty of suppressing hemorrhage, owing to its location, it presented an obvious case for the use of the ecraseur. I am indebted to my friend, Dr. Edwin Anderson, of Wilmington, for the use of that instrument.

February 2d, 1864.—*Operation*: The patient was placed in a chair, his head supported by an assistant, the loop of the chain of the ecraseur was passed over the tumor and carried well up to its base. Owing to its cone shape, it was, with difficulty, retained in that position; this was overcome by the index fingers of an assistant being inserted at the angles of the mouth, and retaining the chain well up at the base of the tumor. This method was thought preferable to transfixing the tumor with needles; the chain being adjusted, it was strongly tightened, causing the pedunculation of the tumor; then, by a gradual and steady turn of the screw, the separation of the mass was accomplished. Very little hemorrhage followed. The patient was put to bed, and directed to use a weak solution of alum water as a gargle. The contents of the tumor presented a brain-like substance, exhaling a very foetid odor. The microscope, to which a portion of it was subjected, revealed the rounded and caudate nucleiferous cells, (true characteristics of malignant disease.)

February 3d.—Patient passed a disagreeable night, owing to the offensive discharge from the wound. Ordered creosote, $\frac{1}{2}$ drachm; gum arabic, 2 drachms; aqua, 8 ounces, M., to be used as a gargle every three or four hours. February 4th.—Wound sloughing; very offensive; continued creosote gargle. February 5th.—Slough separated, leaving a healthy, granulated surface. February 6th and 7th.—Rested well at night; wound presents a healthy appearance. April 13th.—Continued to improve; wound has healed perfectly; cicatrix remains sound; has been doing light work about the hospital for the last three weeks; no indications of the return of the disease; returned to duty.

NOTE.—This man states that he had an uncle who died from cancer of the tongue.

The above case presents some well-marked features of medullary sarcoma, but is lacking in others equally characteristic of the disease—time alone can testify as to its true character.

ART. III.—*Veratrum Viride in Acute Mania a Potu*. By C. R. HARRIS, M. D., Brandy Station, Culpeper county, Virginia.

Having read with great interest and pleasure in Vol. I., Art. 2d, of the "Confederate States Medical and Surgical Journal," February, 1864, an able and valuable communication on the subject of Hydrocyanic Acid in the Treatment of

Insanity, by Dr. Kenneth McLeod, I am induced to report a case of Acute Mania a Potu, which came under my care two or three years ago, and which, I hope, may not prove uninteresting to our profession.

It appears, in the treatment of forty cases of insanity by Dr. McLeod, in which he used the hydrocyanic acid, thirteen were acute mania. The symptom which indicated the administration of the drug as a calmative, was cerebral excitement; in all the other cases reported, occurring in chronic mania, *i. e.*, chronic mania with acute paroxysms, with puerperal epileptic menstrual excitement, etc.

We are forced to admit, from the report of Dr. McLeod, that remarkable success attended the administration of his remedy. The profession are united in relation to the *modus operandi* of hydrocyanic acid. That it is a well known and powerful nervous sedative, all admit.

What was the remedial power excited by the remedy in the patients treated by Dr. McLeod? Reasoning *a priori* it was sedative and calmative, thus allaying cerebral excitement and at the same time exerting its peculiar salutary influence upon the nervous system by curbing and controlling the heart's action.

My patient, to whom I have heretofore alluded, was a case of acute and violent mania a potu, from the excessive use of alcohol for a period of six or eight days. He was generally of temperate habits, and for months a strict "teetotaller." Prior to this attack, he had used little or no alcohol potations of any kind for several weeks.

Becoming worried, as I learned from him, in regard to some unpleasant business transactions with a neighbor, he resorted to free and excessive use of stimulus for the period mentioned, not at any time to full drunkenness, but to an inordinate degree of excitement. He was of full, vigorous habit, stout, athletic and healthy, of a well-marked, sanguineous temperament, and a most powerful muscular development.

He had been laboring under intense mental aberration in violent paroxysms, occurring every hour, or more frequently, during the twenty-four hours preceding the time when I was called to visit him.

The violent paroxysmal attacks were marked by an intensified action of the brain, with a strong disposition to destroy the lives of those he loved most. With the aid of a powerful athletic servant or two, I was enabled to restrain him until there was a decided and happily marked change in his condition. His symptoms were striking:—Eyes suffused, wild, glaring and fiendish expression, with intense excitement (when composed or quiet in bed) of the carotids; pulse full and over 100; skin hot and dry; arrest of all the important secretions. Viewing his case as a critical one and exceedingly unpleasant, I requested a consultation. After the messenger was dispatched, his symptoms were aggravated, and there seemed to be little or no hope for bringing into play any remedial efforts or treatment.

He refused to submit to treatment of any kind. Cold applications to the head were resisted under a threat if we applied them, although he complained of pain in the orbital

region. His voice was husky and throat dry. Seeing some chance of deception by the administration of Norwood's veratrum viride, I asked him if he would take a few drops or teaspoonful of honey, to which he readily assented, as he said he knew the honey had no poison in it. Eluding his observation, after an awful paroxysm, in which he was well nigh exhausted, including the two strong servants and myself, I prescribed, pro-*renata*, eight drops of Norwood's tinct. in the honey, as I said to him, for his dry, hacking cough and hoarseness, both the result of inordinate use of the vocal organs, in swearing, screaming and hallooing. Waiting near an hour and seeing no result whatever, I again administered ten drops as before. He had one paroxysm shortly after, the most awful I ever witnessed. In twenty minutes afterwards he remarked to me, "Doctor, I am awful sick and weak, and am going to die." I at once recognized the peculiar effects of my remedy with great satisfaction—for hours I had been contending with the superhuman efforts of one of the most powerful frames in Virginia. The countenance had changed into calm serenity, a marked pallor was visible on the features; pulse 65, soft and compressible; reason was enthroned, an amiable temper, a kind neighbor, a doating husband and parent was recognized again. In this condition he remained for an hour, conversing rationally, complaining of nausea and some prostration. I ordered a little ginger tea with a small quantity of spirits. He remarked to me that he felt inclined to sleep. I ordered out the servants, and taking my seat by his bed, joyfully watched the approach of Morpheus, which happened in twenty minutes. He slept sweetly and naturally for seven hours. When he awoke, he was well. I ordered him tea and toast, and in a few days he was out and attending to his business. He seemed to recollect nothing of what occurred during the time of his aberration, which was near two days. I gave him nothing more in the shape of medicine, but directed some attention to diet, allowing him food freely, nutritious but digestible.

In this patient we had utter delirium, marked by intense cerebral excitement, with incoherence and delusions of all sorts and degrees. He had active propensities which were destructive, malevolent and homicidal.

What remedy would have so happily, promptly, efficiently and safely relieved the symptoms in this case? It was the only available remedy. It is a well known, and, in the instance alluded to, proved a precious, sedative.

My report has been more prolix than I desired.

The interesting and valuable article of Dr. McLeod, and my opinion relative to the philosophy of his treatment, has strengthened my confidence in the course I pursued, and which was fully sustained by my friend, Dr. R., who arrived after the patient was well, and with whom I wished to have a consultation. I should not hesitate hereafter, in a similar case, as to the course I would pursue. In acute inflammation of the brain or its membranes, especially involving the arachnoid, not, however, to the exclusion of the lancet and other adjuncts, I doubt not the veratrum viride or Dr. McLeod's dilute hydrocyanic acid, by Scheele, would prove a valuable

remedy. I do not now allude to any complications of the cerebral mass induced by alcohol, but ordinary sporadic attacks of acute meningitis or cerebritis.

ART. IV.—*Excision of the Right-Superior Maxilla, and of a considerable portion of the Left, for a Tumor of the Antrum.* By E. R. MORDECAI, M. D., Mobile, Alabama.

Before the war, it was regarded as legitimate to report surgical cases occurring in general practice. Whether your journal, sprung from the novel exigencies of the times in which we live, has adopted such rules as will admit the following communication into its pages, it remains, Mr. Editor, for you to determine.

In the latter part of February, 1862, Mary, aged eighteen, apparently of good constitution, was sent to me for examination by her master, Dr. J. H. Hastic, of Baldwin county, of this State (Alabama.)

The right side of the face was greatly deformed, by an enormous enlargement of the upper jaw, forming a tumor over which the skin and muscular tissue of the cheek were found to be movable. The teeth were sound, but many of them loose in their sockets. The alveolar process was enlarged and softened from the third molar tooth of the right-superior maxilla, to the first molar of the corresponding bone on the opposite side.

The walls of the antrum on the right side were softened, expanded, and projected forward and upward, so as partially to close the eye. The entire nasal process on the right side, and the inferior portion of that of the left, were altered by the disease.

An exploring needle was passed through the softened walls of the antrum, and a small quantity of discolored liquid withdrawn. The instrument did not move freely within the antrum, which seemed to be blocked up with a pulpy mass. A few days after this examination, a fungous growth shot forth from the point of exploration, grew rapidly, and bled freely when touched.

From the history of the case, it was ascertained that the disease was of four years' standing; that the morbid movement, slow at first, had advanced rapidly in the last six months of its duration. There could be no doubt about the nature of the affection. It was an encephaloid tumor of the upper jaw, which, originating in the antrum of the right maxilla, had involved the whole of that bone; and, crossing the median line, had affected the alveolar, palate, and nasal processes of the opposite side.

The patient being very anxious for an operation, and the sub-maxillary and other glands appearing to be in a normal condition, it was determined to yield to her solicitations. She was sent to the Providence Infirmary, of this city (Mobile) where, on the 10th of March, 1862, aided by Drs. Gaines and Cox, and by the assistants of the Infirmary, the following operation was made:

It was thought that, by free dissection, the entire mass of

disease could be removed through Velpeau's simple curvilinear incision. This was made through the cheek on the right side, and extended from the middle of the zygoma, to the commissure of the lip. After dissecting up this flap to the orbit, and freeing the globe of the right eye from its inferior and lateral attachments, the dissection was carried through the frænum of the lip and cartilages of the nose, to the left side of the face, so as to uncover the diseased portions of the left maxilla.

With Liston's cutting forceps, the osseous connections were then severed, and the whole of the right-superior maxilla, with the malar bone, was excised. Of the left maxilla, the alveolar process as far back as the first molar tooth, two-thirds of the palate process, and the inferior portion of the nasal process, together with the greater part of the vomer, were removed.

The cut surfaces were brought together and maintained in apposition by silver-wire and adhesive strips. The cheek was *not* stuffed with lint, as is the fashion in Europe; but had a simple cold-water dressing applied externally.

My patient entirely recovered. Ten days after the operation she was walking about, as if nothing unusual had occurred—the long line of incision in her cheek having nearly healed by first intention. In the course of a week or two she returned home, where she now is, actively employed about her master's household, as she has been since her recovery from the operation in 1862.

Tabulated & reduced Rice
ART. V.—*Resection of Superior Third of Humerus.* By F. MARION LETCHER, Assistant Surgeon P. A. C. S.

The following case, which came under my care while connected with the General Hospital, Liberty, Virginia, is supposed to be of sufficient interest to report:

Private Harvey Barton, company "D," 28th Virginia regiment of infantry, age 27, stout, healthy, a farmer, was accidentally wounded in left shoulder, November 11th, 1863, by the discharge of a musket in his own hands.

Wound inflicted by minie ball passing through tendon of pectoralis-major muscle beneath anterior border of deltoid muscle, and escaping through posterior portion of this muscle just below posterior margin of the acromion process. The muzzle of the gun being but a few inches from the point struck, the ball made an immense track, greatly lacerating the soft parts, and leaving a hiatus in the bone at least two inches long.

There was considerable hemorrhage, which proceeded from some of the smaller vessels about the joint—probably the anterior or posterior circumflex artery. This was soon arrested by position and the application of cold water. The shock was very great.

Re-action having taken place, complete anæsthesia was produced by the inhalation of chloroform, twenty-six hours after injury.

The wound was now carefully examined and a consultation

held, the result of which was, that resection of the humerus should be performed, rather than amputation at the shoulder-joint.

Operation.— semi-lunar incision was made through the deltoid muscle, connecting wounds of entrance and exit. This done and the deltoid raised, the whole extent of the wound was exposed, the limb dangling and being supported only by the triceps lacerated, the coraco-brachialis and the short head of the biceps. Between these muscles, were the larger vessels and nerves of the part, uninjured.

A longitudinal fracture was found, passing through the head of the humerus; this was now carefully dissected from its glenoid cavity.

The arm was now carried transversely across the thorax, all the detached fragments of bone removed, the dissection made as far downwards as the communication extended, and the bone sawn across four inches from the anatomical neck. Fifteen fragments of bone were taken away. The wound, cleansed of partially detracted portions of lacerated tissues, was closed and supported by sutures. The limb, gently pressed upwards by bandage at the elbow, was placed in a comfortable position, and cold-water dressings constantly applied to the wound. Suppuration was almost entirely absent. The deltoid united by first intention. The patient had a rapid recovery; there was not an untoward symptom.

Present Condition.—The limb is shortened two inches—movements of forearm unimpaired; those of arm, of course, not perfect, but all partially made, and even with considerable facility when patient makes a great effort. Within the last two months, there has been very marked improvement in this respect, and it is believed that by constant exertion, the limb will be restored to almost its former mobility.

Remarks.—The operation in which the deltoid muscle is divided, has been objected to, because its functions are permanently destroyed. Probably it is Mr. Guthrie who was first to refute this objection, by showing that division of this muscle does not necessarily lead to permanent disuse, but that under favorable circumstances perfect usefulness may be regained. Certainly, but few cases, demanding this operation, will ever be presented to the surgeon more unpromising than was the one which is the subject of this report. And, yet, a limb is preserved whose functions are already partially performed, with flattering indications of speedy and permanent usefulness.

ART. VI.—*Saline Treatment of Acute Dysentery.* By JAS. BOLTON, Surgeon P. A. C. S.

Any one who has had to deal with this disease, especially as it infests camps, must have been much annoyed by its refractory character. Calomel and opium, found so efficacious in diarrhoea, may have produced their full effect; and the evacuations may have been so greatly improved, that the physician will congratulate himself that he has obtained a complete mastery of the disease, and yet the very next evacuation will dash all his hopes. The characteristic bloody mucus may re-

turn, accompanied by tormina and tenesmus in full force. Calomel may be pushed to salivation, and yet the disease will be unsubdued. Purgatives are of great value, but of these, my experience is greatly in favor of the salines.

I give the patient immediately the following: hydrarg chlor. mit.; pulv. ipsecac and opii aa, 10 to 15 grs.; or, if the stomach be irritable, $\frac{1}{2}$ gr. to $\frac{1}{4}$ gr. of a salt of morphia, instead of the latter ingredient. After an interval of three hours, I commence with the following mixture: magnes. sulphat., 1 oz.; tinct. opii, 1 dr.; aq. menth. pip., q. s.—to make a four-ounce mixture, s. a.; tablespoonful every third hour, until two or three copious watery evacuations shall have been produced. After this, opium may be required to restrain the action of the bowels, and to relieve pain. Usually, after the action of the saline shall have been fully established, the disease is at an end; and this is frequently accomplished in thirty-six hours. If the attack prove obstinate, the calomel will have to be repeated, and blisterings, opiate enemata, &c., may be required.

Sometimes there is a malarial element superadded, as evinced by periodicity of fever, and then it will be necessary to interpose quinia.

Rationale.—The calomel, by its action upon the liver, emulges the portal vessels, and thus relieves the hyperæmic condition of the mesenteric vessels. This action is seconded by the saline cathartic, which produces copious serous evacuations, and thus produces local depletion.

The contraction of the distended vessels, and washing away of the adherent mucus, remove the sensation as of a foreign body to be discharged, and thus relieve the distressing tenesmus.

After an extensive employment of this practice during many years, I can testify that I scarcely know any more satisfactory method of treatment in the whole range of medical practice, than the saline treatment of acute dysentery.

C. S. Medical & Surgical Journal.

RICHMOND, AUGUST, 1864.

AYRES & WADE.....PUBLISHERS AND PROPRIETORS.

EDITORIAL.

External Application of Turpentine as a substitute for the internal use of Quinine in the treatment of Intermittent Fever.

Since the publication of the Reports on the Treatment of Intermittent Fever, by the external use of the oil of turpentine, (*vide* January No. Art. 3,) seventy returns, involving over four hundred cases, have been received from different hospitals and posts, owing to instructions received from the Surgeon-General's office. With few exceptions, the remedy is regarded as one of great power, if not positive efficiency, in preventing a return of paroxysm. But, weighing the elements

of these reports, candor compels us to say that our conclusions are not so positive.

We will, for a moment, consider the difficulties in determining such a proposition. When we take into consideration the difference between *intercurrent* and *recurrent* chill, it is obvious that experimental treatment will be very likely to mislead us. A patient, suffering from debility or a debilitating disease, may have a chill induced by climacteric, or even mental and moral influences; with proper care and freedom from exposure to these causes, the paroxysm will not be repeated, and certainly turpentine, if used, could claim no specialty under such circumstances. Even in recurrent chill, where the paroxysms occur periodically, it is impossible to determine the hour or the day of recurrence, for the quotidian may pass spontaneously into the tertian or quartan without any treatment at all. Therefore, if we attempt to meet the quotidian type with quotidian treatment, it may have already reverted to another type—even to the quartan; and we jubilate for two days over the value of a remedy that really has no result.

We know, moreover, that any powerful revulsion, whether mental, moral or physical, will prevent a chill, and over them turpentine has no special advantage, it only being one of that class. A blister in action, alcoholic stimulants, narcotic medicines, sudden shock, as from a plunge into cold water; exciting news, good or bad, stave off chills, and we all know this, but rarely resort to them therapeutically. In this view of the subject we may regard the labors of our reporters as useful, in calling our attention to the value of such revulsive agents.

Again, many persons have chill as it were constitutionally, that is, all their physical and intellectual disorders are characterized by this symptom. These cases will be cured by purgatives, by tonics, or nervines, but none of them by the anti-periodic treatment, *per se*. Some get well without any treatment, simply wearing out the influence; and some never get well, no matter what the treatment, until they have changed either their habits or their location.

In the cases before us, while a large number are reported as cured by this remedy *alone*, it does not weaken our proposition that many cases (especially intercurrent chill) get well without any treatment at all; and, in the bulk of the cases, the turpentine application was either preceded by purgatives, simple or mercurial, or accompanied by remedies of known tonic, anti-periodic, alterative, or nervine properties, thus introducing new complications which prevent a determination of the question.

Again, these cases, generally speaking, being intermittent fever of a mild type, the patients were often reported to duty, if in two or three days the chill fails to appear. Here is another grave impediment to frustrate our efforts after truth, for nothing is so common as that a chill will cease temporarily, except the certainty of its early recurrence.

We may conclude, therefore, that the terebinthinate externally applied, is one of the large class of agents which may be rendered useful in the treatment of periodic fever, as an adjuvant to other remedies, but that it does not deserve to be regarded as a specific in the treatment of such affections.

CHRONICLE OF MEDICAL SCIENCE.

Motion of Balls, and Ball Wounds. Translated from the French of LEGOUËST. (*Chirurg. Militaire.*)

Motion of Balls.—Projectiles are placed in motion by expansion of the gas from the powder; their form, their density, the arms from which they are discharged, the resistance which they meet with in the air, cause the motion which animates them to vary.

In military art, the *line of fire* is applied to the line of the axis of the piece indifferently prolonged, and which the projectile would follow if it was not subjected to the force of projection of the powder: the *line of aim* is a straight line passing over the most elevated point of the breech or the sight and muzzle of the piece: the *trajectory* is the curved line described in the air by the centre of the projectile; it departs from the line of fire at the muzzle of the piece where it is tangent to it, and remaining constantly below, it departs from it more and more as the projectile becomes more distant from the arm.

Balls are animated by a motion of translation according to the trajectory, and by a motion of rotation upon themselves. The direction of this motion, for spherical balls discharged from smooth-bore pieces, is left to chance; it is, on the contrary, communicated and calculated in advance, for oblong balls discharged from rifled arms.

Motion of Spherical Balls.—In smooth-bore arms, in order to facilitate the loading, there is left a certain difference between the cavity of the barrel and the calibre of the ball; this difference bears the name of *windage*. The result of this is, that when a round ball is placed in front of the powder, it rests generally upon the lower wall of the barrel, leaving a certain vacuum between itself and the upper wall of the barrel. Immediately upon ignition of the powder, a part of the gas product acts directly upon the ball, and causes it to take a motion forward; another portion of the gas escapes between the barrel and the ball, and exercises, in escaping, a certain pressure on the upper part of the latter. Obeying this pressure, the ball, instead of following a direction parallel to the axis of the barrel, strikes against the lower wall; then becoming elevated, it strikes against the upper wall; by successive shocks it gains the mouth of the piece and emerges, turning upon itself according to the direction of the last shock communicated to it. It happens that, by the intervention of the paper of the cartridge, the ball, instead of resting upon the lower wall of the barrel, may rest upon any point of the wall of the arm. Instead of vertical shocks, it may be subjected to shocks according to the diameter passing through its point of contact, and this varying indefinitely, it may, consequently, experience shocks directed according to every diameter of the barrel. If the last point of contact of the projectile with the arm, otherwise if the last shock took place on the inferior wall, the ball takes a motion of rotation from behind forward in a vertical plane, from above downwards; if it takes place on the upper wall, on the contrary, the ball takes a motion from below upwards; if it is the left wall which is last touched, the ball turns from right to left; if it is the right wall, the ball moves in the opposite sense; the same rule applies to all intermediate points.

This movement of rotation is not always concentric. When the centre of gravity does not correspond to the centre of the figure, it happens that the force of projection being applied to the mass, passes through the centre of gravity, while the resistance of the air, applied to the surface, passes through the centre of the figure; these two forces not being opposite, communicate to the projectile a movement of rotation the more eccentric as the two centres are more distant from each other.

The shocks and the indeterminate sense of the rotary motion of

spherical balls discharged from smooth-bore arms, constituted elements destructive to the accuracy of the shot; therefore, various means have been tried for lessening them, through the medium of forcing the projectiles into the barrel. The forcing of the balls consists in diminishing, as much as possible, the windage of the arm—that is to say, the vacuum left between the interior walls and the projectile. This end was imperfectly attained, by surrounding the ball with a piece of buckskin or greased cloth; by flattening the ball more or less by repeated blows with the ramrod, and also by driving the rammer down with a mallet. The two latter modes of forcing, breaking the powder and destroying a part of its strength, were perfected by interposing between the ball and powder a circle of light wood, (*sabot*), designed to bear the force of the blow and protect the powder; lastly, a chamber was fashioned in the breech, smaller than the anterior calibre of the barrel, destined to hold the powder, and on the orifice of which the ball rested and was battered down by the rammer.

Motion of Oblong Balls.—But these procedures, bringing with them new causes of deviation in the shot, were not slow in being abandoned, and were replaced by other means, founded upon the particular configuration given to the projectiles, (different oblong balls,) and the modifications applied to the interior wall of the arms, (rifled arms, chambered arms.)

All oblong balls have a motion helicoid to the axis of their translation.

They are forced down in various ways: In rifled chambered arms the cylindro-conic ball is driven with force by the rammer, the extremity of which is hollowed into a cavity corresponding with the point of the ball, in order not to deform it, the base of the ball reposes upon the margin of the chamber and sinks into it, to a certain extent, at each stroke of the rammer; the chamber prevents the powder being broken and reduced to dust. Compressed between the rammer and the chamber, the transverse diameter of the ball is augmented—it fills the calibre of the gun and takes the impressions of the grooved interior. The windage of the arm being thus done away with, the expansion of the gas, when the powder is ignited, acts entirely upon the base of the projectile; this escaping assumes a helicoid motion, directed according to the grooves.

The chamber opposing the cleansing of the arm, and becoming thus a cause of deterioration, was suppressed, and other means were advised for forcing the balls. The ball *à culot* was then brought into use; this ball is glided into the barrel and maintained in place by a few light strokes of the rammer; when the expansion of the gas takes place, the *culot* wedges into the hollow practiced in the axis of the ball, expands its walls and causes its external surface to penetrate into these grooves of the arm. It was soon perceived that the addition of the *culot* was useless, and that the same result was obtained with balls simply hollowed; these latter projectiles were substituted for the former, and are at this time in general use in the French infantry.

All balls, in their passage through the air, describe a curve, whose element changes at each instant of direction. In order that the oblong ball may maintain its point in front, an indispensable condition to the accuracy of the shot, it is necessary that the axis of the ball change in direction in the same manner as the element of the trajectory itself changes; and it is necessary that it be placed in the direction of the tangent to the trajectory. If it were otherwise, the projectile would assume a gyratory motion, and instead of arriving at its aim by the point, it might arrive at it by its base, by the transverse—in a word, by every point of its surface, like spherical balls.

It is to the action of the air that recourse is had for maintaining elongated balls in their normal direction. When an oblong ball passes from one element to the other of the trajectory, its axis is presented inclined to each new element of this line, but it is incessantly brought back in the direction of the tangent to the trajec-

tory, by the increased resistance which opposes it, from the side to which its posterior part is inclined, the air taking effect in the channels practiced at the base of the projectile. Nevertheless, it is not always thus—in oblong balls not hollowed, the centre of gravity, situated behind the centre of the figure, is not constantly maintained in this position by the action of the air upon the channels, and tends incessantly to pass in front, causing the projectile often to see-saw and reach its aim by the base instead of its point.

Hollowed balls present less rarely this perturbation in their initial direction; the hollow in their base represents pretty nearly, in excavation, the full cone of their anterior part, and their centre of gravity is blended with their centre of figure, or even being placed a little in advance of it, has not the same tendency to become spontaneously displaced.

Beyond their motions of translation, rotation upon themselves (spherical balls,) and helicoid (oblong balls,) balls encounter other deviations, which are communicated to them by the resistance of the air, upon which they take their point of rest in turning. These deviations vary, for spherical balls, in the sense of their rotation upon themselves; for the oblong balls, animated by a regular helicoid motion, are always lateral, and are produced on the side opposed to that of the track of the helia.

Velocity of Balls—Small projectiles, in general, are animated, at the moment of exit from the arm, with a very great velocity. The conditions of velocity depend very much on the quantity of powder composing the charge, the quantity of powder consumed at the moment of explosion, and the manner in which the weapon has been loaded.

The initial velocity of spherical balls from smooth-bore infantry muskets is sensibly greater than that of balls from rifled pieces. This difference is due to the resistance which forced balls encounter in rifled weapons, by their friction, their penetration or tearing in the internal ridges of the arm. A spherical ball fired from an infantry musket (pattern 1822) takes 0''.42 to travel 150 mètres; an oblong ball, fired from a rifled piece, takes 0''.50, to travel the same distance.

But the velocity of spherical balls decreases more rapidly than that of elongated balls; thus the spherical ball, which has at first traveled a distance of 150 mètres in 0''.42, will take 1''.75 to travel 400 mètres; while the elongated ball, which took 0''.50 at the beginning of its course to travel 150 mètres, will only occupy 1''.06 to travel 400 metres. It is at the distance of 200 mètres, about, that the comparative velocity of spherical and elongated balls begin to show a difference, which is in favor of the elongated ball, in proportion as the distance traveled increases. The conical form of the anterior portion of elongated balls, and their spiral motion upon themselves, diminishing the resistance opposed by the air to their progression, favors the prolonged conservation of their velocity.

Penetrating Force of Balls—The penetrating force of balls is estimated by the number of boards they traverse; these boards, constructed of poplar wood and of the thickness of 0^m.026, are placed at 0^m.50 behind each other. The following tables show the difference in the penetrating force of round and elongated balls:

TABLE I.						
		BOARDS.				
		No. 1.	No. 2.	No. 3.	No. 4.	
Spherical balls fired from smooth-bore muskets, at distance of 400 metres,	120 {	Traversed,	2	1	0	0
		Lodged,	2	0	0	0
		Made impres'n,	0	1	0	0

Six balls out of 120 reached the mark; only one traversed the first and second boards; one other made impression upon the second board after traversing the first; two traversed the first board only; two others only lodged in the first.

TABLE II.

		BOARDS.							
		No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.	No. 8.
Oblong balls fired from } rifled muskets, at the } distance of 400 mèt's, }	Traversed,	63	53	52	43	32	14	3	1
	Lodged,	00	3	10	2	4	1	0	0
	Made impres'n,	00	5	3	6	7	12	7	0

The figures of Table No. 2 prove, without its being necessary to compare them with Table No. 1, that the accuracy and penetrating force of elongated balls are considerably greater than those of spherical balls. Physics teach us that the motive quantity of bodies is equal to the product of their weight by their velocity; according to this principle, elongated balls being much heavier than spherical, possess a motive quantity superior to the latter, notwithstanding they have an inferior velocity at their exit from the weapon. The resistance of the air then takes longer to overcome the motive quantity of oblong than of spherical balls. The velocity of the new decrease, necessarily, more slowly than of the ancient projectiles; thus it is explained how the former may, at first, be surpassed in velocity by the latter, then progressively acquire an equal, and lastly a superior, velocity.

It is then necessary, whenever we wish to compare the effects of spherical balls with those of elongated, to estimate accurately the distance at which they have been fired.

Balls fired from smooth-bore weapons undergo no deformity before their exit from the weapon; forced balls, on the contrary, are subjected to those deformities which may be called normal. The shock of the rammer, the action of the chamber upon the base of the ball, the impression of the grooves upon its surface, the enlargement or tearing of its cylindrical portion, are so many causes of constant deformation which we meet with, and which vary their aspect according to the mode of forcing employed.

Wounds from Balls.

Penetration.—When a projectile strikes the parts of an angle more or less approaching to a right angle, it may make only one opening, and, in this case, it is quite likely it remains in the tissues in a sort of cul-de-sac; or else it may make two openings, the one of entrance, the other of exit.

Openings of Entrance and Exit.—The two openings made by the ball, that of entrance and that of exit, have not always such distinct characters as to be distinguished from each other; their relative size has served as a test for long discussions, in which surgeons equally expert have given opinions diametrically opposite. Some contend to have always seen the wound of entrance larger than that of exit; others pretend to have always seen the contrary, and contend that the opening of entrance was larger than that of exit.

The wounds of entrance and exit are sometimes equal, sometimes unequal in their size; this surpassing that, and reciprocally, as Huguier has proved in his researches touching this subject.

Equality in the wound of entrance and that of exit is only possible when the ball, at its entrance, strikes the skin under an incidence equal to that which it possesses in traversing it for its exit; when the impulse of the ball has not sensibly diminished during its passage through the parts; when the tissues traversed are of equal density; when the skin on the side of the entrance wound possesses the same laxity, the same elasticity, and the same thickness as on the side of the exit wound; lastly, when the ball is not deformed, whether in its course through the free air, whether in its passage through the economy, and presents itself to the tissues and the integuments always in the same position.

The opening of entrance is smaller than the opening of exit, when the ball encounters, in the measure of its advance, more dense tissues, as the debris of aponeuroses, of tendons or bones, dragged

along in its course; when it becomes deformed in its passage through the thickness of the parts themselves, when, deformed in its aërian passage, it penetrates in presenting a surface of less diameter than that which it presents at its exit; when the skin glides upon the aponeuroses or upon the bones; lastly, when the ball enters perpendicularly to the parts, and makes its exit in a direction oblique to their plane.

The opening of entrance is larger than the opening of exit, when the ball penetrates obliquely and makes its exit perpendicularly to the parts; when the ball is fired at a short distance; when the projectile carries with it the wadding or portions of the garments, and which it leaves in the parts; when the living tissues are more dense on the side of entrance than that of exit; when the skin glides over aponeuroses or over bones; lastly, when the ball, at its entrance, presents itself under a larger surface than at its exit.

The comparison established by Dupuytren between the physical effects of projectiles impelled by gunpowder upon inert bodies, and their effects upon living bodies; the experiments made, under his direction, by Paillard, and repeated in 1848 by Huguier, cannot be accepted in an absolute manner, and are only applicable in what concerns the solid or osseous parts of the skeleton. Clinical examination, on the one part, and, on the other, experiments upon living animals and upon the dead, are the only sources from which we should draw, for the effects of balls, notions which a long practice may be said to multiply to infinity.

The wound of entrance of balls pretty generally represents the form of the projectile. Round balls most often make a rounded opening of entrance, the dark borders of which are depressed and inverted; the external circumference of the wound is almost always pretty clearly defined by an ecchymotic border; the internal circumference irregularly defined by contused or disorganized borders; its centre presents, sometimes, a loss of substance; at other times, it is occupied by shreds of dermis and mortified cellular tissue. Blood in small quantity or brown-colored sanious liquid flows or oozes from the interior of the wound; sometimes there is no discharge of any character from it.

The dark color of the wound is due in part to the contusion, and in part to the abandonment, by the projectile, of the sediments of the powder, or the gaseous products of the powder, with which it had been in contact for some moments.

The wounds of entrance, and sometimes, but much more rarely, the wounds of exit, exhale an odor manifestly sulphurous, due, like the dark color, to the presence and to the solution of deposits of powder ignited upon the projectile.

The sulphurous odor of wounds must not be confounded with the odor brought by the wounded from the battle-field, whose hands and faces are often blackened by powder, after repeated usage of their arms.

These different phenomena, and in particular the aspect of gunshot wounds, made the older surgeons, who observed them, believe that the projectiles were poisonous, or burned the tissues through which they passed. The latter error reigned until 1564, when A. Paré combatted it victoriously, and showed that *if a ball was fired into a sack of gunpowder it was not ignited*. It is probable, however, that the temperature of projectiles is elevated a little, since the arms gradually become warmer after each discharge, to such an extent that the fire has to be intermitted to avoid accident; but the arms, otherwise made of metals better conductors of caloric than of lead, to the influence of which the projectiles are only subjected for an instant, and which cannot communicate to them a temperature sufficient to burn, and much less to cauterize the parts through which they pass. As to the poisoning of wounds, it has no more existence than the burning; but the decomposition of the organic strata bruised by the projectile may give rise to dangerous compounds, when they pass into the torrent of the circulation, and thus con-

sidered, gives a satisfactory solution of the opinions of ancient surgeons upon gun-shot wounds.

The wounds of exit of spherical balls are generally more irregular than those of entrance; they often present lacerations, and sometimes shreds disposed in rags; the skin seems to have bursted; the borders, much less contused than those of entrance wounds, are habitually more or less everted. The peripheric ecchymosis sometimes does not exist the first day of the wound; it generally does not appear for several days, and is of considerable extent.

Multiple Wounds.—Instead of making one only or two wounds, constituted by the openings of entrance and exit, balls may make multiple wounds, and it is not rare to see three, four, five, and even more wounds produced by the same ball, which in its track has encountered successively many parts of the body. Six wounds have been recognized, in one soldier, made by the same ball having traversed both thighs and the scrotum.

On the other hand, two balls arriving together or at close intervals, the wounded having maintained the same position, may enter by a single opening and remain in the parts, or may make their exit by two separate openings.

The details into which we have entered, give an idea of the general aspect of wounds produced by projectiles from fire-arms, and of their action upon the skin. Some surgeons have believed that the openings made by oblong balls were not so lacerated as those made by spherical, when the discharge was in close proximity; that they were oblong, well defined, sometimes linear, smaller than those of exit; that the openings of exit were more regular, longer than broad, if the ball followed its primitive direction; irregular, very much lacerated, with edges considerably elevated, if the ball deviated and made its exit transversely. But our own observations have convinced us that, if the openings of entrance and exit of oblong balls present a variety of aspect and of form greater than the openings of spherical balls, they do not differ essentially, and that their dimensions are equally subjected to the conditions which we have heretofore exposed. Cases have been cited where oblong balls have made linear openings, but analogous phenomena have been observed in the effect of spherical balls. These phenomena ought to be regarded as very rare and quite exceptional; they are produced under conditions, as yet, poorly defined, and seem to us to reside in the laxity and the folds of the skin struck in the side of flexion of the articulations, when these are strongly flexed.

Track of Balls.—The question of knowing how projectiles penetrate the parts—that is to say, if they penetrate by pushing aside the tissues, by dividing them or by destroying them—is an idle one, inasmuch as they comprehend all these different modes of action, modified by the force which animates them and which makes them contusing bodies. Oblong balls, themselves, in spite of their conical anterior, in spite of the gimlet motion which is communicated to them, do not act otherwise. Some fortuitous circumstances, impossible to foresee and difficult to explain, may, without doubt, cause a ball to penetrate in one way rather than another; but, in the immense majority of cases, the mode of penetration is such as we have indicated.

Whatever may be the case, when a ball penetrates to a certain depth or traverses a certain part of the body, it encounters in its track tissues and organs of different natures, upon which it acts in different manners. The cellular tissue, distributed in such abundance throughout the whole economy, is always perforated; according to the elasticity with which it is endowed, it presents a canal of greater or less diameter, the walls of which are more or less contused, while the centre corresponding to the axis of the track of the projectile is destroyed or mortified. The rectitude, the regularity and the width of the canal depend still upon the volume, the form and velocity of the projectile upon the tension or relaxation of the parts struck.

The aponeuroses and the fibrous tissues, in general, may suffer a

loss of substance; but oftencst they only present lacerations more or less irregular: the tissues sometimes separate, allowing the projectile to pass through a simple cleft in the direction of the aponeurotic or ligamentous fibres, and which, approaching, dissemble the track of the ball. Solid aponeuroses may resist the action of projectiles and remain intact in appearance, while the subjacent tissues are more or less contused. Tendons, in general mobile, always lubricated by the synovial fluid, gliding easily upon one another, may escape the action of balls, but may also be lacerated or contused; their fibres being dissociated or destroyed.

The muscular tissue yields readily to the action of projectiles which divide it, tear it and traverse it, making furrows and canals, with walls more or less regular, and tracks more or less direct. These phenomena depend upon the incidence according to which the muscles have been struck by the projectiles, and of the state of tension, of contraction or relaxation in which they have been surprised. The muscles are equally traversed by balls when they are stretched, contracted or relaxed: it is impossible to say in which of these states they yield to or resist the action of projectiles. Tension and contraction ought to seem to favor the division of muscles, by offering to the balls a certain degree of resistance necessary to insure their action; but they may also determine deviations. Relaxation, it appears, ought to lessen the shock of the ball and allow of the slipping of the muscle, which enables it to escape the projectile. The tense muscular fibre offers less surface to the effect of balls than the reverse; the result is, that perforation or loss of substance in a tense muscle becomes less apparent when the muscle is placed in a relaxed position; the contrary is observed in a case where the muscle has been divided or perforated during its contraction. These conditions, joined to the simultaneous lesion of many muscles which, according to the movement executed by the wounded, are the ones tense, the others contracted or relaxed, and which, in a state of repose no longer preserving the same relation with one another as during their action, cause sinuosities in the track of the ball, and may interrupt its continuity.

All the other soft tissues of the economy yield to the effects of balls; lacerated, divided, perforated or disorganized; they comport with the anatomical texture with which they are endowed. The ones, fixed, cannot escape the direct or oblique action of balls; the others, mobile, sometimes avoid them.

The hard parts, that is to say, the cartilages and the bones, according as they are struck perpendicularly or directly by the balls, suffer different lesions: the cartilages, by their suppleness and elasticity, sometimes escape the action of projectiles; but they may be also contused, fractured or destroyed: the bones, by reason of their density, may resist projectiles, but they are also contused, perforated, split, fractured and disorganized.

These different considerations are so many elements proper for a general appreciation of the form of the track of balls. Dupuytren, who thought that a ball fired at a certain distance always made a wound of entrance smaller than that of exit, also admitted that the ball made a canal broader in proportion as it advanced in the parts. For him, the track of a ball is represented by a cone, the apex of which corresponds to the wound of entrance, and the base to the wound of exit. Experience does not conform to this view of the matter. When the finger is introduced into the track of a ball, it penetrates without difficulty: contracted at the opening of the skin and superficial aponeurosis, it moves beyond, in effect, in a freer space; but, if it meets more deeply with new aponeuroses, tendons, nerves or vessels, ligaments or bones, it encounters either an obstacle or a new constriction, and recognizes numerous irregularities in the route over which it passes. The track of a ball, however direct it may be, does not then constitute a canal of equal calibre throughout its whole extent, or more considerable according as it is more deep; it presents, on the con-

trary, irregular walls, sometimes approximated, sometimes removed from each other, according as it involves tissues which have suffered, each one after its manner, the action of the projectile. Certain ones have only been torn, others have been destroyed; these have returned upon themselves—those, on the contrary, have become separated; the ones, struck with immediate death, have remained in place, the others have been carried away; all have been violently contused.

Deviation of Balls.—Spherical balls do not always make a rectilinear track in the parts wounded or traversed; they deviate sufficiently often from their original direction, sometimes to take such a singular one, that it is difficult if not impossible to give a satisfactory explanation for it. The variable incidence of projectiles upon parts, the difference of density presented by these; the deformation of the projectiles themselves and the motions which animate them; the encounter of aponeuroses more or less tense over which they may glide, of tendons, of muscles more or less contracted, of cartilages endowed with certain elasticity; the shock against bones fractured or remaining entire, are causes which make balls deviate from the direction which they possess at their moment of penetration.

The greater portion of authors who have written upon wounds by fire-arms, cite a number of singular deviations of projectiles. The most remarkable deviation that we have seen, among a very large number, is that of a Biscayan, which, penetrating near the left angle of the inferior maxillary, stopped under the skin between the last false rib and the ilium of the same side: the soldier was struck (battle of Inkerman) while standing, and fell immediately. It results from these facts that projectiles are sometimes arrested under the skin, or make their exit at considerable distances from where they penetrated, lodging or escaping at points entirely unforeseen.

According to some surgeons—Scribe, Quesnoy, McLeod—oblong balls have in general a more direct track than round balls: but we, as well as our confreres in the late campaigns, have seen that they also vary very often. The cone composing their anterior part presents surfaces perfectly disposed to cause deviations of projectiles, when, instead of striking the resisting parts directly by the point, they come in contact by a curved or oblique portion of their surface.

Spherical balls striking obliquely upon the walls of a cavity or the circumference of an articulation, have sometimes circumscribed the cavity or articulation without penetrating, and have made their exit, or presented themselves under the skin, at a point more or less distant from their entrance, sometimes even at a point diametrically opposite. We have seen balls traverse a limb from part to part without fracturing the bones, notwithstanding these found themselves directly in its track. Others, but more rarely, have penetrated into cavities without injuring their organs, notwithstanding their lesion seemed inevitable.

Levacher explained this phenomenon, by saying that the skin or the external wall of the track of the ball resists laterally; if the resistance is greater than the effort of the ball, this, without making its exit, will pass on to a more distant point, when, still encountering a greater resistance, it will progress anew until it has lost all its motion, or until the skin presents itself in such a manner that it can act with all its force.

Dupuytren has accepted and repeated this theory, which gives the fact without explaining it.

We readily admit that solid or elastic walls, like those of the vault of the cranium and of the chest, when they are struck obliquely in their concavity, resist, in a certain measure, the action of a ball, but we cannot admit that the skin alone can act in the same manner, especially when the projectile is animated with a force sufficient to travel over the half or even the fourth of the circumference of the integuments of the abdomen, the cranium or

the chest. We do not think that balls can circumscribe the walls of a cavity, under the integument, unless they are animated by a motion of rotation upon themselves, which they execute in a determined sense. According to our idea the thing occurs thus: When a ball strikes obliquely upon the sternum or a rib, and traverses the skin, it is animated, besides its movement of translation, the direction of which is changed by the resistance and elasticity of the bone, by a movement of rotation upon itself. If this movement of rotation is executed in such a way as to make the projectile turn from behind forwards, and allows it to roll, so to speak, upon the internal surface of the integuments, the projectile will be able to travel over a circular track until its rotary motion is expended. As soon as it no longer exerts this movement, it will obey that of translation and will perforate the integumentary wall. If, on the contrary, the rotatory motion of the ball is from before backwards, in such a way that it cannot roll in the sense of its translation, on the internal surface of the skin, and that it pushes before it the tissues acting as obstacles, it will soon overcome the resistance and make its exit, after having made a very short track, in the direction which the shock upon the bone has communicated to it.

It is necessary, also, in order that a ball circumscribe a cavity, that it shall not be deformed, and that its surface, perfectly smooth, present no asperity capable of tearing the internal surface of the skin.

The considerations into which we have entered make it plain that oblong balls cannot travel similar routes. Observation is here in keeping with theory. Oblong balls, of more or less irregular configuration and animated by a spiral movement, have offered no example of these deviations, commonly enough observed in the track of spherical balls, to have been signalized by the majority of surgeons.

* * * * *

To achieve our general aim, the parallel which we have sought to establish between spherical and oblong balls, we will say that the greater accuracy in the discharge of the latter seems to give a larger number of wounded in modern wars. Colonel Nilford, instructor at the English School of Practice, reports that in Caffria 80,000 round balls were fired from old muskets and wounded 25 Caffres; while at Cawnpore, one company armed with English carbines, attacked by a squadron of cavalry, dismounted 69 assailants at one discharge. It has been calculated that at Salamanca, out of every 3,000 balls fired by the English army, only one took effect. At Solferino, (1859,) in twenty-four hours, 11,500 French, 5,300 Sardinians and 21,000 Austrians were placed *hors de combat*; while the reports of the English army prove that, during the battles of the 16th, 17th and 18th of June, 1815, including the battle of Quatre-Bras and that of Waterloo, the wounded numbered 3,000, without counting those of the Duke of Wellington.

These considerations have a great importance with reference to the organization of the surgical assistance required by the armies of our days.

* * * * *

On the Ordeal Bean of Calabar; its Action on the Human Body, compared with that of Woorara and Conia.

The Ordeal Bean of Calabar is a vegetation of the Gold Coast. The natives call the plant *Eséré*, and it was by the missionaries named the ordeal bean, in consequence of its being given to persons suspected of witchcraft, with a view of detecting their innocence or guilt. Both in taste and appearance it resembles the common white haricot bean.

In a paper read before the Royal College of Physicians and Surgeons by Dr. Harley, the author draws the following conclusions:

1. The ordeal bean may cause contraction of the pupil when taken internally, as well as when applied locally, even. 2. That atropine and the Calabar bean are physiologically antagonistic. 3. That the ordeal bean paralyzes the motor nerves, and leaves the intelligence and muscular irritability unimpaired. 4. That it excites the salivary and lachrymal secretions. 5. That it destroys life by paralyzing the nerves supplying the respiratory muscles—being, in fact, a respiratory poison. 6. Although it may weaken the heart, it neither stops the circulation nor arrests the heart's action. It is not, in fact, a cardiac poison. 7. It is closely allied in its effects to woorara and conia, most closely, perhaps, to the latter; but it differs from both in its tendency to produce muscular twitchings, and in its power of producing contraction of the pupil. Neither woorara or conia exert, generally or locally, any such effect on the iris. 8. The ordeal bean will prove a most valuable addition to the pharmacopoeia, by not only giving us a useful myopic, but also a powerful anodyne, capable of soothing nerve irritation without either destroying intelligence or endangering life by arresting the heart's action.

Mr. Solberg Wells was somewhat surprised that, in enumerating the peculiar properties of the Calabar bean, Dr. Harley had not called more attention to its irregular power of causing contraction of the ciliary muscle, and thus affecting the accommodation of the eye, as this was of far greater importance than its action upon the pupil. The impairment of vision which follows the application of atropine is not due to the dilatation of the pupil, but to the paralysis of the accommodation. This is proved by the fact, that if we employ a sufficiently weak solution of atropine, so that the constrictor pupillæ alone, and not the ciliary muscle also, is paralyzed, vision will be but very slightly impaired. Now, the Calabar bean possesses the peculiar power of not only causing contraction of the pupil, but also of the ciliary muscle, thus changing the normal into a short-sighted eye. It also counteracts the paralyzing effects of atropine upon these muscular structures. With respect to the local action of the bean he might remark, that Professor Czermak and he had been trying its effects upon the eyes of rabbits, directly after decapitation, and they had found that it produced marked contraction of the pupil within about twenty minutes of its application.

Mr. Hulke communicated briefly the results of three experiments which had been made with the alcoholic extract of the bean on patients in the Royal London Ophthalmic Hospital. The first patient had paralysis of both third (cranial) nerves, and mydriasis from syphilitic periorbitis. Two hours after the application of the extract to the right eye, the nearest point of distinct vision was sixteen and a half inches, and the diameter of the pupil was one line, the proximate point having been previously twenty-six inches, and the pupil two and a half lines broad. In the same time the near point of the left eye had become twelve and a half instead of twenty inches, and the pupil one line instead of three lines across. The second patient had paralysis of the left-third cranial nerves, with mydriasis, of four years' standing, the consequence of traumatic periorbitis with abscess. In one hour the proximate point had become six instead of eight and a half inches, and the pupil had contracted from three to three-quarters of a line. In the other unaffected eye the application of the extract effected, in the same time, an alteration of the proximate point from eight and a half to four inches, and reduced the pupil from one and a half to three-quarters of a line. The third was a case of paralysis of the left-third cranial nerve, with mydriasis from periorbitis, possibly rheumatic, which had been twice previously cured with iodide of potassium. In an hour the proximate point of distinct vision was brought from ten to five inches, and the pupil changed from three to three-quarters of a line in diameter.

According to Mr. Ernest Hart, glycerine is the only proper solvent for the alcoholic extract of the bean, the watery solution undergoing rapid decomposition. The solution in which one minim corresponds to three grains of the bean answers best. It counteracts the effects of a solution of atropia, of three grains to the ounce, in dilating the pupil—inducing recontraction.

Popliteal Aneurism successfully treated by the flexion of the limb, after failure of treatment by compression. By S. CUREX, M. D., C. B., Deputy Inspector-Gen. of Hospitals.

Compression was tried by the application of two of Sejourne's tourniquets, one over Scarpa's space, and the other lower down over the artery; two instruments being used with the view of mitigating the pain, by the alternate tightening and relaxation of the instruments.

The repeated application of the tourniquets produced the following effects: great emaciation of the thigh, increased hardness of the tumor, and œdema of the leg. On removing the pressure, the pulsation invariably returned with undiminished force.

The treatment by compression having failed, I decided upon trying flexion of the leg upon the thigh, combined with more generous fare. This was done by gradually flexing the leg, and after a few days bringing the heel in contact with the nates, and retaining it in that position by means of a web strap and buckle. This had the immediate effect of arresting the circulation in the tumor, to the great relief of the patient. He was allowed to move about on crutches, the foot being supported by a long string worn over the shoulders. On the ninth day the leg was extended to the semi-flexed, and on carefully examining the aneurism the pulsation was found to be feeble, and the bruit almost inaudible. On each occasion that the leg was extended for the purpose of ascertaining the progress of the case, the returning pulsation in the tumor, though feeble, could be distinctly felt. Though the collateral circulation soon became very distinct and strong, the treatment had only been attended with a tantalizing amount of success—just sufficient to encourage the hope that perseverance would eventually be rewarded with a perfect cure. At length, despairing of being able to effect complete consolidation of the tumor, it was deemed advisable to abandon the flexion process, and to have recourse to ligature of the artery. As a preparatory step to this operation, the strap was removed and the limb straightened as much as practicable, for a considerable degree of contraction of the knee had taken place from long continued flexion. On returning to the patient the following evening, the unlooked-for discovery was made that the pulsations of the tumor had entirely ceased, and careful examination with the stethoscope failed to detect the faintest bruit. In respect to the further history of the case, from this time there was no return of pulsation, and the cure in every respect was complete.

INTERESTING ANALYSES OF ARTICLES IN FOREIGN JOURNALS.

Life-value of Premature Labor.—The distinguished Obstetrician, Edmund A. Kerby, M. D., etc., on remarking upon the value of inducing premature labor, as an advantage over craniotomy, produces the result of his experience in the following statistics: in craniotomy, one mother in five dies; while in the induction of premature labor there is a loss of only one mother in fifty.

Death from Inhalation of Chloroform.—The *Gazette Médicale*, of Lyons, reports another death from the inhalation of chloroform.

Resection.—M. Maisonneuve, of the Surgeons of La Pitié, laid before the Academy of Sciences, at its last meeting, the notes of a case in which the advocates of conservative surgery cannot fail to be much interested. A young man, in the month of August, 1855, consulted this practitioner in consequence of an extensive necrosis of the tibia of the right leg. The limb presented a deplorable aspect, its volume being triple that of the natural size, and the surface of the skin being furrowed by deep ulcers, through which the mortification of the whole bone during its entire length could be perceived. The disease had commenced after a fall, which occurred two years previously, and the excessive suppuration had occasioned constitutional disturbance of a nature so serious as to threaten life. The most eminent surgical authorities of Paris (M. Velpeau amongst them) had declared that amputation of the thigh could alone save life, and that any idea of preserving the limb was, to say the least, Utopian. In spite of such imposing authority, and confident in the regenerating powers of the periosteum, so positively demonstrated by M. Flourens, M. Maisonneuve determined on attempting the subperiosteal resection of the entire tibia, an operation to which the patient readily consented, and which was accordingly performed on the 24th of August, 1855. Chloroform having been administered, an incision fourteen inches in length was made down the front of the leg, the periosteum was divided, the bone laid bare, entirely shelled out from its fibrous envelope, and so removed *in toto*. With the exception of the two articular surfaces, the osseous shaft was found to be diseased throughout its whole length. The wound healed kindly, and by the fortieth day after the operation the patient was able to walk with the aid of crutches, as in a case of simple fracture; and so complete had been the subsequent regeneration of the tibia that, at the present time, the limb differs in no respect from its fellow, with which it has kept pace in growth, as to length, strength, and bulk; and the only trace which remains of the terrible operation, to which the patient is indebted for the possession of his leg, is the long cicatrix with which its anterior surface is indelibly scored. The extirpated tibia exhibited to the Academy by M. Maisonneuve measures in length twelve inches and a half; in breadth, at its upper part, an inch and a quarter; at its lower extremity one inch. The committee appointed to report on this remarkable case includes Messrs. Flourens, Milne Edwards, Velpeau, Cloquet, Jobert de Lamballe, Claude Bernard, and Longet; and their report is awaited with the greatest impatience.

Pulverization of Water for Bathing Purposes.—The St. Louis Hospital, of Paris, is especially organized for the treatment of diseases of the skin, and therefore possesses a very complete set of medicated baths, which have hitherto been extremely useful. The physicians of the hospital have, however, not been unmindful of the late improvements which have been proposed in balneology. It is well known that both M. Sales Girons and M. Mathieu (de la Drôme) have invented very ingenious machines, by which water is minutely divided and projected, forming a kind of mist, directed with some force upon the bathers. The machine of the latter inventor has, for some time past, been on trial at the St. Louis Hospital, under the superintendence of the six physicians attached to the institution; and it has been resolved to adopt M. Mathieu's *hydrofere*. This machine will surround the patient with very fine rain for one hour, and expend during the process, only four quarts of liquid. Thus may sea-bathing be now enjoyed very far inland, and mineral baths be administered at a great distance from the wells.

The Relation of the Intellectual Functions to the Pons-Varolii.—It is an interesting fact, that in examining the brains of two hundred and eighty-nine cases of lunatics, the pons-varolii was only observed to be affected in two instances. This testimony goes far to establish the fact that the intellectual functions are entirely independent of the pons-varolii.

Complete Transposition of all the Thoracic and Abdominal Viscera.—

The following interesting facts were observed in a post-mortem examination of a lady who died at the advanced age of 85 years. On opening the thorax and abdomen, a complete transposition of all the organs presented itself. The heart lay with its base towards the left side of the spinal column, the apex pointing towards the right side, and reaching to the lower border of the fourth rib under the right mamma. The pulmonary cavity of the heart, which was also on the left side; the aorta and systemic ventricle to the right: so that not only was the heart reversed in position, but also in formation. The left phrenic vein was lying on the superior vena cava; the right innominate was seen passing over the aorta to the left, and emptying itself into the superior vena cava. The lungs were healthy, but old pleuritic adhesions existed on both right and left sides, especially the former. The larger lobe of the liver was in close proximity to the left ribs, the smaller lobes extending only slightly to the right of the sternum. The spleen was situated on the right side, just beneath the heart; œsophagus lying to the right of the aorta. The stomach was situated on the right side, with cardiac extremity touching the ribs, and the pyloric end extending to the left side of the mesial line; sigmoid flexure of colon was on the right side.

Leprosy.—The etiology of this disease has at last been established; chemical analysis, in connection with a long series of investigations, has proven it to be a true dyscrasia or disease of the blood. An altered condition of the blood, demonstrable by chemical analysis, accompanied the premonitory symptoms; the blood always containing an excess of albumen and fibrine. This fact is satisfactorily proved by examining the history of leprosy, as it has appeared in various countries. In Norway and Ireland, where the population inhabit small, close and dimly-lighted huts; where the people are unclean in their personal habits, breathe a moist, marine atmosphere and live on inferior food, this disease is yet frequent. During the middle ages, when the population had become too numerous to be sustained by the produce of the chase, and before the art of producing large supplies was understood, leprosy was common in all parts of Europe. It disappeared as soon as full supplies of fresh meats, vegetables and bread were produced. In Egypt, Palestine, Spain and Brazil, where the very poor dwell in dark and unventilated huts, and where want and dirt are conspicuously manifested, lepers are still to be found. This disease now occurs exclusively among the lower grades of society. The disease is not contracted by those enjoying good diet, and surrounded by good hygienic conditions.

The Effect of Forests on Atmospheric Temperature.—M. Becquerel has just published the results of certain experiments instituted by himself for the purpose of ascertaining the effects produced by the presence of forests on the temperature of the surrounding country. He has found that trees heated during the day, by the sun's action, and cooling during the night under the influence of nocturnal radiation, give rise first to an ascending current of hot air, and secondly to a descending current of cold air, which lowers the temperature of the surrounding soil during the night and morning. This result, according to M. Becquerel, proves why in the vicinity of a forest the temperature is lower than in an open plain. The cutting of timber in any great quantities would consequently have the effect of rendering the summers warmer and winters less cold, by procuring the removal of a cause producing a like diminution of temperature in either season.

Amputation at Hip-joint.—Mr. Spencer Wells has recently performed amputation at the hip-joint for malignant growth of the thigh. The patient, a young married woman, recovered from the operation.

Femoral Aneurism controlled after seven hours digital compression.—M. Chassaignac communicated to the Surgical Society of Paris the case of a patient affected with femoral aneurism, just above the ring of the adductor magnus. Digital compression was begun at noon, and the tumor was firm and still at seven in the evening, the collateral circulation having taken twelve hours to become established. The compression was exerted on two spots alternately, viz: midway between ilium and pubis, and the muscular masses a little below, the fingers being assisted by a little bag filled with lead, which latter facilitated the manipulations. As the pain was very great in the ilio-pubic, the alternation allowed of continuous compression. The collateral circulation is now well developed, and all the arteries are felt, both in the leg and foot. The compression was carried on for twenty-four hours more, after the condensation of the tumor, in order to prevent a return of the pulsation and insure the permanency of the cure. M. Chassaignac stated that the results of the case had been witnessed by Messrs. Curling, Syme, Taylor and Hodgkin.

Induction of Premature Labor.—Henry James, Esq., F.R.C.S., Surgeon and Accoucheur of London and Lying-in Hospital, and Fellow of the Obstetrical Society, has presented seven interesting cases in which he has easily succeeded in inducing premature labor by a very simple process. The patient is placed in the usual obstetric position; fore-finger of the left hand is then passed up to the os uteri, and as soon as possible between its lips, into the uterus; the neck is to be now slightly pulled down and the finger, still within, is to be passed round it as far as possible. Success does not usually attend the first effort; upon repeating this process, however, some two or three times, considerable care being taken not to rupture the membranes, the pains of labor soon come on. The kolpeurynter or elastic bottle, with tube attached, is then passed in; the kolpeurynter is then slowly filled with warm or cold water, producing slow and gradual extension of the os uteri. Labor soon comes on and the delivery is easily effected.

Legal Evidence of Life in an Infant.—A case of great interest in medical jurisprudence (case of Brock *versus* Kellock) has recently been decided by the Vice-Chancellor, Sir J. Stuart. The point at issue was to determine the legal evidence of life in an infant.—Dr. Robert Lee and Dr. F. H. Ramsbotham contended that the proof of respiration having been performed was necessary to establish the fact of extra-uterine life. Dr. Tyler Smith, Dr. Freeman and Dr. Alfred Taylor deposed that the continuance of the heart's action after the severing of the umbilical cord must be accepted as proof of independent life. The vice-chancellor, in his decision, confirmed Dr. Tyler Smith's view of the case, and expressed his surprise that a man in Dr. Lee's position should have made such an affidavit. There was a large pecuniary amount involved in the decision. The case is of great importance, as it will serve to establish the law, which has been much unsettled upon the point at issue.

The Deposit of Tophus in Gout.—The gouty diathesis is the only one in which the secretion of the tophus is met with. This deposit is composed, in part, of urate of lime; in part, of phosphate of lime. Its occurrence has long been known; and in the great "Dictionary of Medicine" may be found the history of a gouty subject, who produced such a quantity of chalk-stone during his lifetime as to supply sufficient material for his own tombstone after death.

Cure of Gonorrhœa by blisters.—H. Chalmers Miles has presented a very interesting paper on this subject. By absolute rest, low diet, the administration of mild purgatives and a blister applied either to the corpus spongiosum or to the inside of the thighs, he succeeds in uniformly arresting this disease, and restoring his patient to health in three or four days.

Radical Cure of Inguinal Hernia.—Mr. Kingdon, Surgeon to the City of London Truss Society, testifies that the majority of operations for this purpose are ineffectual, inasmuch as the patient is not benefitted for more than a few months. He furnishes seven cases in which Wutzer's ——— operation (the favorite operation with surgeons) had practically failed. The patients had been operated upon by some of the best surgeons in the City of London. There can be only one opinion respecting operative surgery. Its only claim is based upon the permanent benefit which it can effect; and if experience proves that any one operation fails, even at a remote period, in its object, it is the duty of those acquainted with the failure to make the facts public, in order that a proper value may be attached to the proceeding.

The Advantages of Correct Administration in the Medical Department of an Army.—After the re-organization of the Medical Department in the British army, in which the establishment of adequate rank and the creation of a thorough system of inspection were the chief features, the reformation produced was as surprising to all concerned as beneficial in its results. Lord Herbert, on moving the thanks of Parliament to the army, for their conduct in China, was able to announce to a cheering House, what no previous War Minister ever had it in his power to say, "that the troops during the whole of that arduous campaign had enjoyed as good a state of health as if they had been at home."

Pus Cells in the Atmosphere.—The following discovery has recently been made. In the Orphan Asylum, near Prague, an epidemic of purulent ophthalmia lately broke out, and ninety-two children out of two hundred were attacked. Great care was taken to avoid the contact of the matter, but the medical attendants and nurses, nevertheless, took the disease. M. Eiselt thereupon proceeded to examine the air with Pouchet's aëroscope, improved by Purkynje, and in the atmosphere of a ward where lay a great many of the children, a large number of pus cells were found. In fact, the cells were noticed upon the instrument, as soon as the air was made to pass through the apparatus.

Duration of Life on the Mediterranean Coast.—It will be observed that, contrary to what is usually supposed, the average duration of life on the Mediterranean coast is far below the standard existing elsewhere. The average duration of life is twenty-nine years at Pisa and Florence, and twenty-eight only at Rome and Naples; whilst at Paris it is thirty-nine, and in London forty-four. For corroborative evidence refer to Dr. Carriere's highly-esteemed work on "*Le Climat de l'Italie*."

Mortality in Variola and Varioloid.—It is gratifying to state that the mortality in these two diseases is not greater in the military hospitals of the Confederacy than in the chief small-pox and vaccination hospitals of England.

In the English hospitals, mortality in variola is 34.78; in Confederate hospitals, mortality in this disease is 40.58. In varioloid, in the English hospitals, the mortality is 9.46; in the Confederate hospitals, the mortality is 3.26. When the many disadvantages attending the construction and establishment of the Confederate small-pox hospitals are considered, this fact is as remarkable as it is gratifying.

Bloody Sweat.—In St. Mary's Hospital, London, a well-marked case of this kind has occurred, satisfactorily authenticating the agonies of Gethsemane. It is proper to state that this was a case of vicarious menstruation, occurring in young woman of twenty-seven years of age.

Pulsation of the Heart after Cessation of Respiration.—An instance has recently occurred in England where the action of the heart continued fully twenty minutes after all respiration has ceased.

Special Hospitals.—These hospitals have been condemned. The report of the Queen's Hospital, Birmingham, endorses the statement, that much detriment to the public and the medical profession arises from the practice of opening small institutions under the name of hospitals for particular forms of disease, in the treatment of which no other management, appliance or attention is required than is to be found in existing general hospitals. It should not be forgotten as a part of the duty of all who protested against the development of special hospitals, that the most efficient arrangements are required for making the treatment of various diseases as complete as possible in General hospitals.

An unusual Operation.—M. Kœbete, of Strasburg, has lately performed a rather extraordinary surgical operation. He was engaged in removing, through the parietes of the abdomen, a large fibrous tumor of the uterus, when he determined, on perceiving the morbid state of the womb and one of the ovaries, to remove both the latter and the uterus, leaving merely the vaginal portion of the cervix uteri. The patient, five weeks after the adoption of these unusual and severe surgical measures, had experienced neither hemorrhage nor untoward symptoms. She is now (says the *Gazette Médicale de Strasbourg* of the time) quite convalescent.

The Cause of Diabetes.—In a case of diabetes, in the service of M. Trousseau, at the Hotel Dieu, he endorses M. Bernard's deductions in regard to the cerebral origin of this disease. It will be remembered that, by pricking certain spots in the walls and floor of the fourth ventricle, M. Bernard succeeded in producing diabetes in animals. In the case of M. Trousseau's patient, the grey, nervous substance, in the neighborhood of the fourth ventricle, was found in a state of fatty degeneration. A similar condition was ascertained to exist in another patient who recently died from diabetes, the details of whose autopsy were presented to the Biological Society by M. Luis.

Testicle retained in the Inguinal Canal.—At a meeting of the Pathological Society of London, Mr. Curling showed a specimen of an undescended testicle; in this no spermatozoa were found. The structure was natural, but neither in the testicle nor the vas deferens, nor in the vesicula-seminalis, were there any spermatozoa. Debate elicited the interesting fact, that this is the usual condition in cases of undescended testicle. Mr. Curling also showed the testicles of an idiot; the structure of the testicle was undeveloped. He demonstrated that this condition frequently co-existed with undeveloped brain.

New Treatment for Pneumonia.—Dr. Strohl, of the Strasburg School of Medicine, has brought to the attention of the profession the happy effects of the acetate of lead, as a substitute for antimony, in the treatment of this disease. He gives large doses, varying from five to ten grains; the pulse is reduced from ten to fifteen beats per minute, in a very short space of time. No evil effects have resulted from this practice.

Resection of the Knee-joint in Paris.—M. Maisonneuve has lately reported a case of this kind, and strongly recommends the operation. He states that he attributes his success to having dressed the wound with spirits of wine.

Mr. Fergusson has lately performed the same operation on a child six years old, in which the recovery was perfect. After healing, the shortening of the limb amounted to no more than an inch.

An Anomalous Case of Vaccinia.—Dr. S. Lawrence Gill gives a description, with a plate, of a case of vaccinia in which, instead of one, thirty-two pustules (not vesicles) were formed. The patient was vaccinated in the ordinary manner; the virus being inserted at three points of a triangle; in the centre of each pustule there was a well-marked depression.

Reward for Gallantry on the Field.—"Her Majesty has been graciously pleased to confer the decoration of the Victoria Cross, upon Surgeon Herbert Taylor Reade, for conspicuous gallantry during the siege of Delhi. The wounded were in very great danger, when Surgeon Reade drew his sword and calling upon the few soldiers who were near him, succeeded in driving the enemy from their position."

Strangulated-oblique Inguinal Hernia, treated by inverting the patient.—In a well-marked case of this kind, where all methods of relief had been uselessly tried, the difficulty was immediately overcome by inverting the patient. The merit of re-introducing a method of relief which had become obsolete and forgotten, is due to Mr. Jessop, Cheltenham, England.

The Cisticercus Cellulosus transformed within the Organs of a Man into Taenia Solium.—Messrs. Küchenmeister, Leuckart and Humbert have, at last succeeded in proving that the cysticercus cellulosus, when swallowed or received into the system by injection, is transformed into the taenia solium.

Chloroform in Puerperal Convulsions.—Several interesting cases of immediate relief of puerperal convulsions by the administration of chloroform have been reported. The ill effects usually anticipated, were not observed.

The Impropriety of administering Morphia in Diseases of the Kidneys.—This fact has been fully established by post-mortem examinations recently made.

Amputations on the Battle-field.—By an order of the Surgeon-General of the United States Army, thigh amputations on the battle-field are positively forbidden.

Ague in an Infant.—Attack first occurred when the child was ten days old; paroxysms well marked; stages well defined; type, Quotidian; mother had suffered from erratic ague for two years.

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ORIGINAL COMMUNICATIONS.

ART. I.—*Thoughts on Surgery, Operative and Conservative, suggested by a visit to the Battle-field and Hospitals of the Army of Tennessee.* By G. M. B. MAUGHS, P. A. C. S.

That a great desire should exist upon the part of hundreds of young physicians, who by the exigencies of the times had suddenly been transformed into army surgeons, to perform operations was most natural. And that many limbs should have been sacrificed to the want of, and desire to obtain, experience during the early periods of the war, was to be expected. But, with all these chances against the retention of a wounded limb, we might reasonably suppose that three years continuance of the most destructive war of modern times, with the thousands of mutilated men all over the land—with thousands more who have lost their lives by, or in despite of, the operations to which they have been subjected—would have sufficed to gratify the penchant for lopping off limbs with even the most ambitious. That it has not done so, however, will be apparent to any surgeon who will visit the battle-field, where cases of compound fracture are condemned to the knife with as little hesitancy as if men's limbs, like those of the salamander, were reproduced with great certainty.

Indeed, we fear that the highest boast of modern surgery, its conservation, whereby limbs that formerly would have been condemned are now preserved, has been lost sight of, in the desire, unfortunately too common, to make the most out of the present surroundings—the preservation of life and limb being made subordinate to the great end and aim of the army surgeon, the acquiring experience in capital operations. And this, within due bounds, laudable desire to become skilled in their profession is, unfortunately, by no means confined to the field-surgeon; for, should the sufferer leave the field with a limb, through which a ball had passed, he cannot long congratulate himself upon his good fortune in not having been subjected to the frightful hazards of an amputation; for on arriving at the hospital he has another ordeal, fiercer perhaps than that through which he has just passed, as here he meets with one or half a dozen surgeons and assistant surgeons, zealous in the cause of humanity, all anxious to relieve him of so useless an appendage. These hospital surgeons, with their assistants, are even less likely to let pass such an

opportunity of acquiring or displaying skill than field-surgeons, from the fact that they less frequently have so rich a morceau thrown them; and the knowledge of the fact that amputation will almost certainly be performed at the hospital, acts as a constant, and to some extent justifiable, inducement to the field surgeon to amputate all limbs *that will bear cutting off*. And when, from either the small extent of the wound or the part in which it occurs, the idea of amputation cannot be entertained, *resection* or *excision* frequently comes to the surgeon's relief, as almost all cases of compound fracture will admit more or less interference in this way. And good cases for acquiring or displaying skill in this modern development, of what was intended to be conservative surgery, too frequently present themselves, where, with some considerable patience and industry, by dissecting up from one to three inches above any injury to bone or soft parts, the articulating ligament may be pierced, and the *entirely sound* head of the bone turned out. It is true, by this operation the dangers to life have been greatly increased, and the probabilities, when the patient survives the operation, of the limb ever again being useful, immeasurably diminished; but then it gives *resection* a chance if the *limb* has none. But it will happen occasionally, either from the nature of the wound or its great distance from an articulating cavity, that *resection* cannot be resorted to. What then is to be done? Remove the loose spiculæ and leave the cure to nature? By no means; for though it is not doubted a cure would be effected, yet it might be thought to show the paucity of the surgeon's resources, and *excision* fortunately comes to his aid in this, as *resection* had in the other condition. And that surgeon must be a novice indeed who—with the aid of free incisions, by carefully dissecting from the periosteum and soft parts all partially detached pieces of bone—cannot produce a lesion of two or three inches in the continuity of the shaft of a bone. What if nature, overtaxed and placed at disadvantage, is unable, as is too frequently the case, to restore the continuity—to fill up this hiatus with ossific deposit? Well, the surgeon has, at least, demonstrated that, however bad the wound may be, art can make it worse. It would seem scarcely necessary to state that such practice is an unwarrantable interference with, and tax upon, the reproductive energies of the individual—utterly abhorrent to scientific, conservative treatment, and receives no support from the modern views of the physiological development of bone.

In the introduction of resection and excision into modern surgery, it was intended they should be conservators, superseding, in many cases, amputations. The former may be resorted to in cases where the head of the bone is shattered; but in all cases, where the fracture is below the anatomical neck, and where the articulating ligament, anatomical neck and head of the bone are intact, resection is meddling surgery, increasing the risks to life and diminishing the chances for a useful limb, while excision of any considerable portion of the shaft of a bone is a dangerous expedient, scarcely warranted by the results of the practice, and should be resorted to with great caution and in extremely rare cases.

In cases of compound fracture of the shaft of a bone, where amputation has been decided against, it would be well to remove all entirely detached pieces of bone lying in, and immediately contiguous to, the wound, as should be done with other foreign bodies; but all pieces not immediately in or at the tract of the ball, and that are adherent to their periosteum and the soft parts, should be let alone, as they serve as points for the development of ossific matter, thereby securing a bony connection, and greatly lessening the time required for the reparation of the injury.

As to amputations, the most serious and most abused of field operations, it may be well to inquire whether, *except in cases where the limb has been carried away, leaving an irregular stump, or where there is very great destruction of the soft parts, with injury to the large blood-vessels and nerves*, it would not be well for the cause of humanity were these operations upon soldiers in the field entirely proscribed, and the surgeon's ease, except that of the chief surgeons of divisions, left as bare of amputating knives as a Federal medicine chest is of calomel and tartar emetic, and for the same reason.

On examining this subject, we shall consider the frightful dangers to life of amputations of the thigh, and, by comparison with the results of wounds of the same class treated without amputations, establish, as we believe, the superiority of conservative over operative surgery; and if it can be shown that, by an attempt to save the limb, the dangers to life are lessened, the claims of such practice need but little further argument, as most persons, we opine, are ready to admit that a natural limb, though a little shorter, is greatly more useful than any artificial one could be; and if any one has a desire to become expert in operative surgery, a glance at the statistics of amputations of the thigh, with their frightful percentage of mortality, may well cause him to hesitate to acquire experience at such a fearful loss of life.

By reference to any or all statistics, both of foreign wars and the present one, it will be found that, independent it may be of the nature of the wounds, more than half of all amputations at or above the knee prove fatal, and in the upper-third of the thigh this alarming mortality runs up to eight or nine out of ten; that is, out of every hundred so operated upon, eighty or ninety will die; and this result would not, most probably, be greatly changed were such amputations performed upon limbs previously uninjured, so abhorrent is nature in the higher animals to mutilations. As it is thus

apparent that we must kill our patients by cutting off their limbs, it becomes a question of morals, as well as science; and if a mode of treatment less destructive of life can be adopted, should become one of law, whether we be allowed thus recklessly to sacrifice the lives of our brave soldiers. At all events, when it is considered that from sixty to ninety percentage of all soldiers thus mutilated will die, it becomes a question of too much gravity to be left to the whim, passion or judgment of an inexperienced surgeon or assistant; but that, at least, this much of a safeguard be thrown around the wounded soldier, that every army division have a committee of at least two of the most learned and experienced of its surgeons, chosen by the surgeons and assistant surgeons of the division, whose duty it shall be to consult with the surgeon or assistant in charge, and without whose advice and consent, except in extreme cases, it should not be lawful to amputate a limb.

To all surgeons of experience in the army, the conservative treatment of these cases will find support in the recollection of numerous cases, where, from some cause, as the opposition of the patient, the presence of persistent shock, or the conservative views of the surgeon, the limb has been spared and recovery has taken place in many instances, without a bad symptom and in a surprisingly short time. I have witnessed a number of such cases, and have never conversed with an army surgeon of experience (though amputation is the rule) who cannot refer to a greater or less number. Among less notable cases, Governor Clark and Col. Holden (now member of Congress) may be cited, and, as both these gentlemen's limbs were fractured in the upper-third, had amputation been performed, there is little doubt that a newspaper paragraph, announcing their devotion and heroism, would have been substituted for their present valuable services. And this limited support, which the conservative treatment receives from the observations of myself and others, is not *only in accordance with all standard authorities on surgery for the last quarter of a century*, but is fully supported by the result of cases occurring in the Richmond hospitals during a given period, where, of 172 amputations of the thigh, with almost all of them at points most favorable, (10 of the upper, 28 of the middle and 70 of the lower-third, with 64 the seat not given, which gives, by calculation, 16 of the upper, 44 of the middle and 112 of the lower-third,) we have 103 or 60 per cent. of deaths. Now, it will be noticed that, notwithstanding the bill of 60 per cent. mortality, nearly all of these amputations were at points most favorable—the lower and middle-thirds—consequently must have been for injuries at or near the knee. What it would have been had the operations been performed for wounds received at these points will be made apparent in considering the conservative treatment.

In these hospitals, during the same time, there were treated for similar wounds, compound fracture—gun-shot wounds—of the thigh, without amputation, 216 cases. Of these, 83 were in the upper, 57 in the middle and 38 in the lower-third—the seat of 38 is not given. By calculation, we have 100 of these 216 cases in the upper, 69 in the middle and 47 in the

lower-third. Of this 100, as the ball had passed through the upper portion of the bone, at or through the trochanters, in many instances, at least one-third would have required disarticulation at the hip-joint—an operation always fatal. The other two-thirds would have required amputation near or through the trochanters—an operation but little better than one between the first and seventh cervical vertebræ, as 95 per cent. of such cases prove fatal. Of the first 100, therefore, had amputation been performed, not more than three or four would have recovered. Of the remaining 116 cases, most of which were injuries of the middle-third, and, consequently, in many cases, would have required amputation in the upper-third, we may safely calculate the average mortality at 76 per cent. or 28 recoveries—giving 32 recoveries to 184 deaths. Now what was the result of conservative treatment? Out of the 216 cases, 80 recovered and 121 died—leaving 15 unaccounted for. By calculation, we have 86 recoveries and 30 deaths, or nearly 40 per cent. recoveries in conservative, against less than 15 per cent. in operative surgery. A result in favor of life surely worth regarding, to say nothing of the advantages, in most cases, of a natural over an artificial limb. The last point may, however, in this mechanical age, be a mooted one, as there are not wanting advocates of artificial limbs who would insist upon their superiority over natural ones. We are not, however, of the number, except in cases where the surgeon was anxious to acquire experience.

I am aware that it has been stated, I know not upon what authority, that this immense superiority of conservative over operative surgery, taken from the Richmond hospital records, is not supported by results attained elsewhere, and, to account for it, it has been suggested that many cases may have died unreported. This may be a fortunate guess; but might it not be equally so to guess the same thing has occurred, to even a greater extent, in cases of amputation? Nor can it be said that the amputated cases were the least serious ones; their locality proves the reverse, and, indeed, reveals the secret why so many were allowed a chance for life and limb.

ART. II.—*Treatment of Hospital Gangrene.* By Surgeon HARGROVE HINKLEY, of Demopolis, Ala.

The success I have met with in the treatment of hospital gangrene, induces me to send you some notes from my case-book regarding it. When I took charge of the hospital at this place, there were several very bad cases in the surgical ward, which had progressed unfavorably, in spite of treatment. I copy from my case-book:

Case 1.—J. Cope, sergeant of company "K," 18th Mississippi volunteers; wounded at Gettysburg, May 3d, 1863; flesh wound in right arm, anterior to bone. Patient walked two hundred miles after receiving wound. Sent to hospital at Richmond. Wound healed over, and patient left hospital on furlough for Mississippi. Arrived at Demopolis, Alabama, last July, with violent fever; remained in quartermaster's warehouse one day, and was then moved to this hospital, at that time in charge of Surgeon Somerville Burke. Erysipe-

lous inflammation attacked the wound in a day or two, and gangrene supervened. The disease advanced rapidly, bidding defiance to the treatment used. On the 22d of August, when I took charge, the muscles and tissues on the anterior and lateral portions of the arm were gone, and the bone and arteries visible, but a small portion of healthy flesh remaining posteriorly. The space already destroyed involved the middle-third of the arm anteriorly and laterally, and the muscles were dissected by the gangrene to above insertion of deltoid and nearly to elbow. The treatment hitherto pursued not having had any effect, and the disease advancing rapidly, I decided, two or three days after taking charge, to amputate at the shoulder-joint, as a *dernier* resort, with but faint hope of saving life. The condition of the patient was bad in the extreme for an operation. Wasted to a skeleton; pulse low and frequent; cold, clammy perspiration; suffering intensely and well-nigh exhausted; the general opinion of all the medical men who saw the case before operating was, the patient would not survive the operation.

On the 26th of August, the patient being well stimulated and put under the influence of chloroform on the operating table, placed out of doors in the open air, I amputated at the shoulder-joint. The blood-vessels were somewhat enlarged, and some redness was observed on the flaps. Patient recovered from the influence of chloroform without any bad result and with much moral courage, and expressed hope and confidence in the attendants. Pulse, four or five hours after operation, much improved in volume, and patient in better condition than before the operation. Wound dressed next day, and to all appearance doing well. Patient expressed himself better, and partook freely of nourishing food and stimulants. Ordered muriated tincture of iron, twenty drops, three times a day; opium, one grain, three times a day.

On the fourth day after the operation, symptoms of gangrene appeared, and in a few days the flaps had sloughed away and some adjacent tissues. Patient hopeful and placing implicit reliance on the efforts made to save him. The treatment adopted consisted in stimulants, *i. e.* brandy-toddy and egg-nogg, *ad libitum*. The most nourishing food consisting of soups, roast fowl, eggs, bread and butter, milk and coffee. Tincture of iron, gradually increased to twenty-five drops, three times a day; opium, three to four grains a day; nitric acid to slough; the wound well washed out with soap and water; dead parts removed, and freely washed off with turpentine and Labarraque's solution of chlor. soda; tincture of iodine painted on edges and around the wound; tincture of iron applied once to wound itself; slough checked in five or six days, and granulations of a healthy character made their appearance and advanced so rapidly, that, by the nineteenth day after the operation, the granulations had filled the wound up even with the surrounding sound parts. Cicatrization rapidly followed. Bed sores, which had appeared and been attacked by gangrene, were subjected to same local treatment and relieved by circular (ring) cushions, and though somewhat obstinate, yet gradually yielded to treatment. Patient entirely recovered by the first week in November.

Case 2.—C. W. Fitzpatrick, corporal of company "D," 6th Missouri volunteers, admitted to this hospital July 9th, 1863. Wounded May 16th, 1863, at Baker's creek; injuring the phalangeal and metatarsal articulation of great toe of right foot; missile a minie ball. Moved from battle-field to Clinton, thence to this hospital, when erysipelatos inflammation took place, gangrene supervening and resulting in the loss of large and second toe. Gangrene checked, August 30th, by local applications of nitric acid, turpentine and chlor. soda, (Labarraque's solution,) and tinctura ferri sesquichlor. and opium internally. Stimulants, *ad libitum*, and nourishing diet. December 31st, healed over.

Case 3.—E. D. Wilson, private, company "I," 27th Louisiana volunteers; wounded at Chickamauga, on the 20th day of September, 1863. Flesh wound of left leg in middle-third, posterior surface, severe; missile a minie ball. Compound fracture of the tibia of right leg, middle-third; ligation of tibial artery. September 21st. Application of splints; cold-water dressing to both wounds. Left Atlanta on the 21st of November; passed through here to Meridian, and was sent back here for treatment by Dr. Scott, Medical Director; reached here on the 29th December, 1863. Condition of wounds bad; extensive sloughing having taken place in right leg, and wounds presenting a very serious aspect.

Treatment.—Stimulants, nourishing diet, and tincture iron and opium. *Local Treatment.*—Nitric acid, sol. chlor. soda and turpentine. Under this treatment, the condition of the wounds rapidly improved, and, on January 11th, the case was convalescent.

Case 4.—Sidney Anderson, private company "B," 20th Alabama; admitted December 8th, 1863; wounded at Chickamauga by a grape-shot entering anterior portion of upper-third of thigh, fracturing femur. Amputation performed just above the wound on September 22d. Favorable progress until wound was nearly cicatrized. Left Fair Ground Hospital, Atlanta, on December 30th, 1863. On arrival at Selma Wayside Hospital, erysipelatos inflammation had taken place, and, when he arrived here, gangrene had supervened. Ordered muriated tinct. iron, fifteen drops, three times a day; brandy-toddy through day and night; diet full and nourishing; wound dressed with Labarraque's sol. chlor. soda.

December 9th. Treatment continued; opium, one grain, at night. Dec. 10th. Wound freely touched with nitric acid; treatment continued. Dec. 11th. Slough increasing; treatment continued. Dec. 12th. Nitric acid again applied, and flaps sloughed off; gangrene burrowing in dissecting muscles; treatment continued. Ordered opium, one grain, *ter in die*. Sound parts painted with tinct. iodine. Dec. 13th. Slough checked above; still progressing on under and inner portion. Nitric acid applied to these parts. General treatment continued. Opium changed to sulph. morphia, half grain, *ter in die*; to be taken half an hour before dressing wound and at 10 P. M. Patient's condition bad; pulse feeble and frequent; much despondency; bowels tending to diarrhoea; countenance haggard. The sloughing has left no place to operate but at hip-joint, which, in this case, must prove

fatal. Gangrene must be checked or patient succumb. Dec. 14th. Treatment continued; condition same. Quite a pocket exists on under side, the muscles being disorganized up to two or three inches of the groin, the skin being left. Care taken after dressing the wound with turpentine and sol. chlor. soda; to dry it well with lint before closing it. Dec. 15th. Treatment continued; slough checked; healthy granulations on all parts, except inner part of thigh. Dec. 16th. Patient improving; pulse and strength better; healthy granulations all over. Dec. 17th. Treatment continued; decided improvement. December 31st. Patient has been kept on same treatment—iron, morphine, stimulants and nourishing diet, and has much improved. Small slough appeared yesterday, but is gone to-day. Strength improving, and granulations rapidly forming. During all this time the patient has been by himself in a tent. Being much improved, and the weather very cold, he was removed into a ward, one hundred feet long and thirty feet wide, sixteen feet high to collar beams, with no ceiling between roof and floor, and having three ventilators open in roof and fifteen windows in the ward. It is warmed by three small wood stoves. He was now taken charge of by one of my assistants, Dr. John E. Pugh, myself still having general supervision.

January 1st, 1864. Wound not quite so well to-day; some little sloughing apparent. Nitric acid touched to several spots; opium omitted. Jan. 2d. Stump healthier; treatment continued. Jan. 3d. Patient restless; pulse small; stump sloughing at lower edge; touched with nitric acid. Ordered sulph. quinine, grs. xij; opii, grs. ix. M. ft. pil. 9. S. take one three times a day. Also sulph. morph, gr. $\frac{1}{2}$, at 11 P. M. Other treatment continued. Jan. 4th. Continued treatment. Jan. 5th. Patient slept well; pulse feeble; appetite poor. Jan. 6th. Condition unchanged; treatment continued. Jan. 7th. Ditto of yesterday. Jan. 8th. Stump improving; treatment continued. Jan. 14th. Patient continued to improve daily, and the stump to show healthy granulations all over; filling up rapidly; the treatment continued. January 15th. Patient doing well; no appearance of gangrene. Jan. 22d. Patient has improved very rapidly the past week, and is getting stronger; wound closing fast; granulations entirely healthy, and bids fair to get entirely well now.

There were four other cases of gangrene, not so serious as those above-mentioned, and which all yielded to the treatment adopted. When the tincture of iron was suspended for a few days, the gangrene would re-appear or grow worse, and when the opium was diminished, the case would assume an unfavorable aspect. Muriated tincture of iron and opium internally, with brandy or whiskey-toddy, egg-nogg, and rich food, with local treatment of nitric acid, turpentine and sol. chlor. soda, (Labarraque's,) constitute the main treatment. Patients to have plenty of fresh air. I have not lost a case of gangrene during the war which has been treated as above, and have seen but one death as yet from this disease.

ART. III.—*Two Cases of Penetrating Bayonet Wounds of the Chest.* By Surgeon S. BARUCH, 3d South Carolina Battalion, Kershaw's Division.

Case 1.—Private Wm. Tinkler, company "G.," 3d battalion S. C. infantry, was wounded in a bayonet charge of the enemy on the 8th May, at Spottsylvania Court House, Virginia. He was brought to the infirmary an hour after reception of his wound. On examination, two apertures were discovered, one a triangular, ragged opening in the back, about one-half inch to the right of the tenth dorsal vertebra, and the other a small puncture, three inches below the right nipple, near the angle of the ninth rib.

He states that as the enemy's line advanced he was in a stooping posture, loading and firing rapidly. While thus engaged he was transfixed by a bayonet, and he asserts positively that he distinctly felt the withdrawal of the weapon.

When first brought to me, the following symptoms presented themselves. His face was pallid and anxious, nostrils distended; skin cool; pulse weak, but somewhat excited; breathing difficult and labored. There was slight oozing of blood from the posterior orifice, *which was contracted*, and bloody expectoration similar to that occurring in gunshot injuries of the lungs. These symptoms, conjoined with the direction of the wound, led me to the belief that the right lung was transfixed. The "bent" position of the patient prevented implication of the right lobe of the liver, as in that posture the liver is separated from the diaphragm, and thus the bayonet avoided this organ.

May 9th.—Patient expectorates bloody mucus, complains of pain in the right lung, has but little cough. Shock has passed off and he is tranquil. May 12th. Bloody expectoration ceased, but pain still continues. Auscultation and percussion reveal no signs of pneumonia or pleuritis. May 13th. Posterior wound is healed over by scabbing. Still no symptoms of pneumonia. May 16th. Patient is doing finely; there is some acceleration of the circulation and dyspnoea, but no physical symptoms of lung disease. May 17th. Sent to General Hospital in fine spirits.

Case 2.—Corporal G. Percival, company "F.," 3d South Carolina battalion, a man of large frame and good constitution, was wounded in a desperate charge on Kershaw's brigade, on the 8th May.

His case was brought to my notice about three hours after infliction of the wound.

Divesting him of his shirt, which had an opening in the back, I examined the chest carefully, and found two apertures of a triangular shape, one, the largest, in the back, just below the inferior angle of the left scapula, and the other, very small, over the sternum, near its right border, on a line with the fourth rib.

Patient was lying on his abdomen and partially on his left side, behind a small rail-pile when he was transfixed by a bayonet. When brought to the infirmary his countenance was pale, and *did not* wear that expression of anxiety so peculiar in penetrating wounds of the chest; his symptoms indicated a shock to the nervous system, induced by the intense excite-

ment of a hand-to-hand conflict with a drunken and infuriated foe. The whole system seemed to suffer from depression following great excitement. Acting on this supposition, I administered some stimulants and anodynes, which partially restored the patient, and enabled him to reëte his encounter with the enemy.

Under this treatment the pulse rallied and skin became warm. There was but slight dyspnoea, no cough and but little bloody expectoration, indicating that the injury to the lung was not extensive. A careful investigation of the posture of the patient during the reception of the wound and a consideration of its direction convinced me that the weapon grazed the right border of the posterior portion of the left lung, passing through the posterior mediastinum and evading the heart, which was displaced by the patient lying somewhat on his left side. May 9th. Patient has recovered from the shock and nervous depression; this fact confirmed me in the belief that the lung was not seriously implicated, and the heart and great vessels escaped entirely. His countenance seems much more cheerful; pulse somewhat excited, but it is more of a nervous than febrile excitement. Very slight expectoration of bloody mucus, and he coughs only when he makes an effort to change his position. May 11th. Doing well, dyspnoea inconsiderable, and no physical signs of pneumonia or pleuritic inflammation. His bowels having been costive, a mild cathartic was ordered. May 16th. Still free of pulmonary inflammation, but he complains of pain in the epigastric and umbilical region. Emollient poultices were applied, and anodyne administered at bedtime. May 17th. Pain has discontinued, and patient is again in good spirits. May 19th. Sent to General Hospital.

Both patients are now—in July—on duty with their command.

Remarks.—Besides these cases, a number of others of a less serious nature presented themselves for treatment, nearly all of which recovered at the field infirmary and were returned to duty.

The limited experience derived from the treatment of these cases induces me to consider bayonet wounds as very simple injuries, readily healing by first intention.

Perfect tranquility and continued application of cold water are the most important remedial means. I found that the chest cases, though presenting a more extensive track than those of the hand, loins and shoulder, healed more rapidly, for this reason, that the slightly punctured patient would not obey my injunctions to keep quiet.

The *sequelæ* of bayonet wounds are not as serious as those of gun-shot injuries. Not one of the men who received an injury of this kind on the 8th May, has been rendered unfit for service. There is no exudation of superfluous lymph, no irregular gluing of muscular fibres, no permanent or even temporary contraction of muscles and tendons.

Our knowledge of bayonet wounds has been so limited that their effects have been, until a recent period, involved in considerable doubt and even mystery. Experience, however, teaches that we have exaggerated the nature of these injuries,

and attributed to them formidable qualities which they happily do not possess.

Is it not our duty to convey the teachings of experience to the noble men who are daily confronting the foe, and to the amelioration of whose sufferings our labors are devoted?

Why is it that soldiers have such a wholesome fear of the bayonet? Why is it that the determined approach of a line of glistening steel makes the cheek blanch and causes the bravest hearts to waver? Why do we in every battle witness the rout of lines that have unflinchingly withstood a continued galling fire of musketry and artillery, as soon as the opposing line approaches closely with fixed bayonets?

This dread of "cold steel" is, in my humble opinion, mainly attributable to ignorance of the nature of the injuries inflicted by it. There appears to exist in the minds of men a vague dread of transfixion by the bayonet. But this would not be so were it generally known that bayonet wounds are almost harmless, when compared to the ploughed tracks which the terrible minie bores through the tissues. The bayonet is easily diverted from a straight course by bony, cartilaginous and tendinous tissues, and forms a smooth track, whilst the minie is relentless in its course, whirling with unimpeded force through all opposing structures, crushing, tearing, maiming all. A bayonet wound almost invariably heals by first intention under auspicious circumstances, and leaves no deformity behind, whilst the simplest ball wound requires weeks for a complete recovery, and then, perhaps, leaves the sufferer with a contracted and useless limb.

It is not my purpose to write an elaborate essay on these injuries. I merely desire to call the attention of my colleagues to the necessity of a more searching investigation of their nature, and to the advantages that would accrue were our soldiers made to appreciate the immense difference in the effects of bayonet and gun-shot injuries.

ART. IV.—*Report of Additional Cases of Febris Intermittens, Treated with the Extract Pinckneya Pubens.* By A. M. FAUNTLEROY, Medical Director, Wilmington.

Case 1.—L. B. Bynum, private company "A," 2d regiment engineers. Patient has had repeated attacks of fever since September, 1863. Form of fever, "Tertiana," hour of expected attack 4 o'clock, May 25th, 1864, P. M. 7 A. M., pulse 68—6 grains administered, and the same ordered every hour. 12 M., pulse 80—slight moisture of surface of body; patient comfortable; complained of no ill effects from the medicine. 1 P. M., pulse 80—diaphoresis the same, patient quiet; 6 grains given. 2 P. M., 6 grains given. 3 P. M., 10 grains given; pulse 78—diaphoresis profuse; patient restless, but complains only of heat. 3½ P. M., 10 grains given; pulse 76—diaphoresis very profuse. The paroxysm did not appear. During the night the patient had two very copious, dark evacuations from the bowels. He improved in every respect; his appetite increased in an incredible manner. He remained well, attending to his ordinary duties, until about ten days ago, (5th of July) when he was attacked with bilious

remittent fever, from which he is now rapidly convalescing. 68 grains in all were administered.

Case 2.—Spy, private company "B," 10th North Carolina battalion of artillery. Patient strong and robust; has had five attacks of intermittent fever; quotidian form; hour of expected chill, 11 o'clock, June 5th. At 6 A. M., 6 grains were given according to directions given the evening before. 7 A. M., pulse 64—6 grains given, and the same ordered at 8 and 9 o'clock. 10 A. M., pulse 85—very slight moisture on surface of body. 11 A. M., pulse 92—10 grains given; no moisture; patient complained that the chill was coming on. 11½ A. M.; chill came on at 11.25 minutes, but slight. 12 M.; chill has passed off; fever succeeded; pulse 110. The fever lasted two hours and a half, followed by the usual degree of diaphoresis. June 6th. Patient reports himself as "right smart better;" pulse 72. 6 A. M., 6 grains given, and the same ordered every hour, which had the effect of breaking the chill and fever; diaphoresis began at 10 o'clock. The patient returned to duty two days after.

Case 3.—Poole, private company "A.," 2d regiment engineers. Has had occasional attacks of intermittent fever throughout the winter; form Tertiana; time of expected chill, 10 o'clock P. M., June 9th. 7 A. M., pulse 75—rather weak; 10 grains given. 8 A. M., pulse 80—patient comfortable; 6 grains given. 9 A. M., pulse 90—patient restless; complained of pain in back. As the pulse had risen so rapidly, 3 grains only were given at 10 o'clock. 10 o'clock A. M., chill came on two hours earlier than anticipated; both chill and fever, however, were of shorter duration than usual. June 10th. The pinckneya pubens was administered in 6 grain doses every second hour during this day. June 11th. 6 grain doses were given every hour, commencing at 6 o'clock A. M., and had the effect of warding off the chill; diaphoresis, as usual, supervened.

From a careful study of the cases herein reported, I am forced to adhere to my views rendered in the report of the 22d of April, 1864, to wit: That the extract has undoubted antiperiodic properties, still it is too slow in its action to be used as a substitute for quinia sulphas. It has, with one exception, always produced diaphoresis. Its therapeutical action is principally that of a tonic, and it deserves a position in the front rank of vegetable tonics. From the tardiness of its action, and its effect upon the vascular system, together with its manifest invigoration of the digestive organs, I am induced to think its energy as an agent is displayed through the organic nervous system.

ART. V.—*Gun-Shot Wound of the Axillary Artery—Diffused Aneurism—Ligature of Subclavian Artery—Death on ninth day from Pleuritis.* By WM. SELDEN, Surgeon Liberty Hospital.

Private K. P. Kahea, company "B," Jeff. Davis Legion, aged 29—very large and muscular—while acting as scout, near the Peaks of Otter, on June 14th, was shot with a minie ball through the left axilla; hemorrhage represented as very

profuse, notwithstanding which he rode eight miles, closely pursued for three miles. He spent several days in a private house, and was admitted to Campbell's Hospital on 19th. The ball had passed through the tendons of the pect. maj. and lat. dorsi, severing the axillary artery, apparently in its lower third; the hemorrhage had ceased spontaneously on the first day and had not recurred; pulse imperceptible; very great swelling and hardness in the axilla, extending to the elbow, with great discoloration from ecchymosis; severe pain from shoulder to hand, with a sense of numbness, but not complete loss of sensation; the capillary circulation but little impaired, and temperature normal; when he sat up the veins of the forearm became much distended; wounds healthy and healing; pulse in the right arm feeble and frequent—above 100; appetite feeble; he slept but little, and then from the influence of opium. He continued in the same state, with little variation, for three weeks; sometimes we thought that we could feel a faint pulsation in the radial artery, but it was so slight as to be doubtful. Early in July, while the general swelling of the arm diminished, the tumor in the axilla was obviously enlarging and extending under the pectoral muscle, when, by the 8th, it became very prominent and as large as the fist. On the night of the 10th, a free arterial hemorrhage took place from the posterior wound; after the loss of about a pint of blood, it was arrested by pressure for an hour upon the subclavian above the clavicle, and did not return; his pulse very feeble, and above 120; he was very much alarmed about his condition—indeed, he had been unusually low spirited from the first. On the 11th, for the first time, a distinct pulsation was felt in the tumor, both in the axilla and over the pectoral muscle; there was no perceptible thrill or bruit; from this time the tumor steadily increased in size, and the pulsation daily became stronger; there was also increase of the pain and numbness in the limb; constant fever and sleeplessness and loss of appetite. It was decided, in consultation, to tie the subclavian above the clavicle, as affording him the best chance for recovery, although his general condition was not favorable for an operation. Accordingly, on the 23d July, assisted by Surgeon Blackford and the rest of the surgical staff of this post, I ligated the artery where it passes over the first rib. The operation was rendered somewhat difficult by the unusual number of superficial arteries that required to be tied, and by the elevation of the clavicle from the tumor in the axilla. The pulsation in the tumor immediately ceased, and did not return; the swelling became less tense, but the pain continued and the fever increased; the capillary circulation in the limb continued good, and its temperature appeared to be little if at all diminished, (we had no thermometer to test it accurately,) for a few days he seemed doing pretty well, but on the 26th, the incision presented an unhealthy appearance, with a slight erysipelatous blush and some swelling below the clavicle. By the 28th, the shoulder and breast became enormously swollen, so as completely to conceal the aneurismal tumor. On the next day, 29th, there was extensive erysipelas on the outside and back of shoulder, which spread rapidly over the breast and down the arm to the elbow; the

incision suppurating and unhealthy. On the same day, he was seized with a severe pleuritic pain on left side, and great difficulty of breathing, but without cough; the respiratory motion was confined so exclusively to the right side that the left seemed paralyzed, and was obviously several inches smaller than the right side, although auscultation showed the presence of effusion in the left thorax; bowels torpid and tympanitic; pulse 150 and very feeble. 30th. No improvement in his condition, although the pain in the side had nearly ceased. 31st. Prostration extreme; respiration more difficult; died soon after midnight.

Autopsy.—Axillary artery and vein both severed by the ball in their lower third; the axilla filled with a large clot extending to within three inches of the elbow and considerably beneath the pector. maj. The coagulum was moderately firm and contained in a thin adventitious sac of cellular tissue, but without any fibrinous deposit. The median nerve had escaped division, but was very much discolored, as were also the other nerves in the axilla. The artery, where ligated, had united, but not very firmly; no clot had formed within it, owing probably to the fact that the posterior scapular artery, instead of being a branch from the transversalis colli, arose directly from the subclavian, between the scaleni, and about two-thirds of an inch above the point of ligation; this would probably have led to secondary hemorrhage after the separation of the ligature. There was a large serous effusion in the left side of the thorax, with a deposit of a thick layer of fibrine over a large surface of the lung; phrenic nerve healthy. There was also slight deposit in the pericardium and some effusion. The only treatment that was admissible after the operation was morphine, stimulants and tinct. mur. ferri.

It would probably have been better to have tied the subclavian soon after his admission, when his general health was less impaired. But would the rules of surgery have justified the ligation of a large artery when there was no hemorrhage and no pulsation in the tumor? The axillary swelling and absence of pulse at the wrist afforded strong presumptive evidence that the artery was divided, but we could not be sure that the absence of pulse was not owing to the pressure of the tumor, which might have arisen from the division of a branch of the axillary, and if so we might reasonably hope that in time it would be absorbed and the circulation restored. It was not until the tumor began to increase in size, with distinct pulsation, that we felt satisfied that an operation was indispensable, and our choice then lay between disarticulation and ligation of the subclavian—the ligation of the axillary in the midst of such swelling and altered relation of the parts was out of the question. We decided upon the ligation of the artery as being sanctioned by the highest authority; the more especially as his constitutional condition almost forbade the hope of successful amputation.

I would suggest, that in a similar case, where the posterior scapular arose directly from the subclavian, it would be proper to tie it, as well as the main artery; in this case it could have been done without difficulty, as it could be plainly seen and

felt where it crossed the cervical plexus. The other branches of the transverse colli and the supra-scapular would probably be sufficient to supply the anastomosing circulation. The immediate cause of death in this case was pleuritis, which has been observed to be far the most frequent cause of death after ligation of subclavian. The erysipelas to which there has latterly been some tendency in this neighborhood, no doubt also contributed to the fatal termination.

ART. VI.—*Two Cases of Compound Fracture of the Femur.*

Reported by JOHN STAINBACK WILSON, Surgeon Jackson Hospital.

Case 1.—Thomas Lane, private 33d N. C., company "I," aged 45, farmer, previous health good, but of short stature and delicate appearance, and bilious temperament, was wounded on 12th May, 1864, by a minie ball, which entered the thigh antero-externally, five inches below anterior superior spinous process of ilium, and ranging obliquely upward and backward, made its exit just below the tuberosity of the ischium, fracturing femur. Admitted 18th May, with limb bound to a rough plank, having been thus transported from the battlefield, near Spottsylvania Court House. On 24th May the limb was placed on a double-inclined plane, with side pieces, and strips of coarse cloth extending from the lower edges of these, constituting thus the bottom of the box and the supporters of the thigh and leg. The foot was loosely bound to the foot-board, with the view of steadying the member, and guarding against any involuntary movements on the part of the patient, but with no intention of making extension or counter-extension.

No bandages or dressings of any kind were applied except a thin cloth, over the seat of injury, wet from time to time with cold water. During the whole progress of the case there was very little local inflammation; the discharge was slight, and the patient never had any fever or other constitutional disturbance.

July 6th.—Examined Lane to-day—union good—deformity not great, and the shortening is only two and a half inches. The patient shows me the ball, which is much battered; and there is a hardness beneath the skin on the anterior aspect of the thigh, which I feel assured is an encysted fragment of the wounding missile.

Case 2.—J. A. Dixon, private 10th Georgia battalion, company "B.," aged 26, farmer, previous health good, sanguine temperament, wounded 14th May, by a minie ball, which, entering the inner side of the thigh at the junction of the upper and middle thirds, and passing upward and outward, escaped five inches below anterior superior spine of ilium, fracturing femur.

Admitted 18th May, under much the same circumstances as those described in the case of Lane. Treatment the same, with like gratifying and truly remarkable exemption from local and constitutional excitement.

To-day, (July 6th,) I find the whole limb encased in a

starch bandage, (immovable apparatus) applied by my successor, Dr. T. P. Perkins. This enables the patient to walk about on crutches, and altogether he is quite comfortable, with the exception of some pain from the pressure of the bandage, which may require re-adjustment. On examination, before the use of the starched apparatus, I found the union good, the deformity moderate, and the shortening *only one inch and a half* by careful measurement.

ART. VII.—*Tartarized Antimony in Traumatic Pneumonitis and Pleuritis.* By P. W. DOUGLAS, Surgeon 2d Regiment Georgia State Line.

Thomas Tolant, private company "A," 2d regiment Georgia State Line, was stabbed with a pocket knife three inches in length, in the chest, between the third and fourth ribs, penetrating the pleura and slightly puncturing the lungs. Loss of blood externally very slight; considerable hemorrhage internally; nervous depression very great, but of short duration; reaction violent; within twelve hours, or by the next morning after the occurrence, at eight o'clock the previous evening, found a high state of inflammation, and hurried and oppressed respiration, almost incapable of articulation, entirely monosyllabic. The chest, on the side which received the wound, was considerably swollen, giving a drum-like sound on percussion and the quill sound on auscultation; the opposite or right side, the rustling and crepitant sound. Pulse, 140 to 150; skin hot and dry; tongue dry, though not thirsty. This case, altogether, presented a very unfavorable prognosis. I at once put him upon an anodyne diaphoretic of tartarized antimony, swt. spts. nitre and morphine. In about six or eight hours the whole surface of the body was in a gentle perspiration, and pulse, though equally full, was yet more compressible. After using the antimonial pulv. for six or eight hours, I desisted, and put him upon veratrum, nitre and morphine, with every caution to his intelligent nurse to watch his pulse and inform me. About midnight, I was awakened and told that my patient was thought to be growing very weak; pulse, very small and slow. I simply ordered a little toddy and discontinuance of the veratrum. Next morning, six hours after stopping veratrum, found pulse gradually rising and patient spitting up some blood. Ordered saline purge. After operating, about ten o'clock of the second day, again put him upon the tartarized emetic mixture for two days and nights unintermittingly, stomach and bowels tolerating it well. He took nothing else, and every day I could plainly perceive a subsidence of the active inflammation in the softening pulse, cool and moist skin, and gentle and unoppressed respirations. He is now well. It is evident to my mind, if I had abstracted that amount of blood which would have been necessary to reduce the pulse and subdue the acute inflammatory symptoms, my patient would have died, because of reasons known to every medical man who has a local injury, a considerable amount of extravasated blood and great nervous depression to treat. Tartar emetic is no new remedy in conditions like the

one I have written, but for its uniform, satisfactory and immediate success, I give it to you, that forsooth it may be another atom of rational medicine placed in the long since overbalanced scale against the lancet in inflammatory affections of the chest.

ART. VIII.—*Report of a Case of Ligation of both Common Carotids for Secondary Hemorrhage.* By RUSSELL MURDOCH, Assistant Surgeon P. A. C. S.

Benjamin Creicy, private company "F," 42d Virginia infantry, entered Winder Hospital, May 9th, 1863, on account of a gun-shot wound passing through the larynx, at the upper margin of the thyroid cartilage, on both sides, and impinging slightly upon the thyro-hyoid membrane.

On May 12th, about two o'clock, A. M., I was called, during the absence of the physician who had charge of the case, to check hemorrhage from the wound. I found him in an exsanguined condition, about thirty ounces of blood on the floor and still bleeding profusely; extreme dyspnoea and distressing nausea. Hemorrhage was temporarily checked by pressure on the main vessel of the right side until assistance could be called, and a rapid consultation held. It was considered impracticable to tie the bleeding ends of the artery, because of the tumid condition of the surrounding parts, the impossibility of administering chloroform, and the too obscure light furnished by a tallow candle with which to make the necessary dissection. The common carotid was the artery selected for ligation. The operation was performed at the seat of election. It was rendered extremely difficult by the collateral circumstances above mentioned, along with the violent struggles of the patient.

The case progressed favorably until the morning of the 15th, when, at a similar unseasonable hour, I was again called to him, on account of hemorrhage from the left side. The circumstances being the same, the other common carotid was tied. In both these hemorrhages, the bleeding was as active towards the pharynx as externally. Much blood was swallowed, producing extreme nausea; the larynx also got its full share, as indicated by the violent efforts to get breath. For the following thirty-five hours, no symptoms of an untoward character ensued; the circulation was to all appearances adequate for the nutrition of the parts to be supplied; the functions of the brain perfect, and the wound healthy. Unfortunately, on the 20th, a hemorrhage ensued, which terminated in death.

An *autopsy* threw some light upon the sources and sequence of the different hemorrhages. On the proximal side of both the ligatures there was found the ordinary plug of lymph; on the distal of the right, the vessels were flaccid, and appeared smaller than those of the left, while the latter were of their natural calibre and appearance. The superior thyroid artery was traced past the wound, while the hyoid branch approached it. This vessel, on the right, was lost in the ulcerated and engorged tissues, while on the left, although the vessel was for a part of its course lost, yet an open-mouthed artery was

discovered in its course, opening directly back into the pharynx, which was, without doubt, the source of the fatal, if not of the two last hemorrhages. The brain was not examined, for want of proper instruments.

The difficulty of tracing the vessels, even during the favorable conditions offered by a *post-mortem* examination, produced by the effused and ulcerated conditions of the tissues and the depth of the vessel which was found, fully convinces us that the course adopted, although the result was unfavorable, was the only one of which the circumstances admitted.

ART. IX.—*On Eupatorium and Serpentaria.* By Dr. M. B. BECK, P. A. C. S.

In bringing these two valuable remedies before the eyes of the medical profession, I have scarcely anything *new* or *exciting* to say about them; for I am aware that many of our best physicians have been for many years, and are now, using them, in various diseases, with beneficial results; also their properties and their *modus operandi* have been, from time to time, ably and fully set forth by experienced and competent men. My chief object is to ask not only for these, but for all our valuable *indigenous medicines*, a more extended and general use, especially when other remedies are difficult to be obtained, and command so high a price.

The boneset, eupatorium and the snake root, (*Serpentaria Virginiana*), have long been held in great repute, particularly in the treatment of all fevers of a low grade, whether intermittent, remittent or continued; and it is especially for these diseases, or the so-called typhoid and camp fevers, that I would press their merits upon the attention of the profession.

About two years ago, I had some eight or ten cases *at one time*, on a farm, of what is generally called typhoid fever, and, after giving some mild mercurial, I used a cold decoction—I prefer the decoction to the infusion—in the proportion of about half an ounce of the dried leaves of the boneset and the same quantity of snake root to a pint of water, giving of that a wineglassful every three or four hours, day and night, *pro re nata*, with entire success; that is, I mean to say I used no other tonic, and all the patients had a good recovery. This decoction, as far as my limited experience goes, can be given when neither quinine nor cinchona may be admissible; it also makes an admirable *menstruum* for the *tr. cinch. comp.*; and just here allow me to say that, in my opinion, the *tr. cinch. comp.* would be greatly improved by a little more of the *Serpentaria* in it. Let me then respectfully ask of all those who have more extended means and better opportunities, to give these and all our indigenous remedies a fair and full trial, and report their various experiences.

The eupatorium is now in the proper condition to be gathered, and should be dried on the stalk in an attic, *dry* and *dark*; for snake root, the month of September is best. It is very probable to my mind, that the want of success and confidence in many of our remedies is owing, in a great degree, to the improper time at which they are collected, and to

the wrong way of curing or preserving them when collected, and, lastly, to the inefficacious manner in which they are prepared or compounded for administration. These are not matters of small importance, and I hope that the framers of our "Confederate States Dispensatory," should we have one, will give all these points a more careful attention than they have heretofore received.

ART. X.—*Conversion of Gun-Shot Wounds into Incised Wounds as a means of Speedy Cure.* By Surgeon J. J. CHISOLM, P. A. C. S.

In surgical practice, attention is often called to subcutaneous wounds or injury to the deep structures, accompanied by considerable extravasation of blood, which is a positive sign of crushing of these tissues. In the natural progress of such cases, when the skin has not been much bruised, nature, by her healthy processes, remodels the injured parts, absorbing the effused fluids, and also those portions of tissue caused by the blow and which are no longer filled for use in the economy. Rarely is suppuration induced in such contusions, however extensive they may be, provided the skin remains entire, the natural tendency being to speedy restoration; and very rarely is suppuration, and even sloughing, not induced where the skin is equally crushed with the deeper tissues.

A consideration of these facts, familiar to every practitioner and frequently seen in shell injuries, has suggested to me the propriety of closing the outer orifice of gun-shot wounds, placing them in the condition of subcutaneous injuries, when we should expect such good results as usually follow in the progress of contusions. As soon as possible after the receipt of the injury and before any symptoms of re-action have appeared—having removed all foreign bodies—make two elliptical incisions enclosing the wound, extending through the skin alone; dissect away the lacerated tissues between the elliptical incisions, which will leave two smoothly cut surfaces in lieu of the ragged orifices. These must be brought in perfect opposition by sutures or adhesive straps, and healed by water dressings, so as to ensure union by the first intention. If air can be kept from the track of the ball, although the deep tissues be crushed, experience teaches us that no suppuration will take place; numbers of cases from every battlefield show us that in long circuitous tracks made by balls, when they still remain embedded, with but one orifice permitting the entrance of air, and more especially when the position of the orifice is such that the pressure of a long prominence compresses the track near the outer opening, this orifice rapidly closes and the long sinuous track of crushed tissues gives us further trouble. Simple flesh wounds through a limb, with the free admission of air to the track of the wound, usually requires weeks to effect cicatrization, and sometimes, at the termination of several months, one of the orifices is still discharging, although no foreign body complicates the wound. As long as the wound remains open, it is liable to serious accidents and complications of sloughing, gangrene, hemorrhage, &c., and, when healed, a fibrous, puckered cord

represents the track of the ball, tying together the muscles, and intimately connecting the skin with the deeper tissues, so that any movement extended to the cicatrices is painful long after the wound has, to all appearances, healed. Besides, the suppuration induced and the irritation of the muscles perforated, with the diffused effusion of lymph gluing contiguous muscles together, cause contraction and deformity of limbs, which are with difficulty corrected. When the orifices in gun-shot wounds close at an early period, particularly when they heal, as they sometimes do, by a process similar to the first intention, we find no such sequel, and such soldiers very soon return to duty. If the above suggestion could be carried out of converting the contused and lacerated orifices of gun-shot wounds into simple incised wounds, healing readily by the first intention, the mortality after battles would be materially diminished, the hospitals would be rapidly emptied, and the army soon recuperated. If the views suggested as above are correct, and they are supported by numerous instances, there is no necessity of extending the incisions beyond the skin, and as it will be always remembered that the skin immediately around the orifice of entrance sloughs, all this bruised portion must be removed. These simple incisions, extending through the skin alone, can in no case add to the serious character of the wound, nor interfere in any way with the usual progress, should the incision not heal by the first intention. The attention of field surgeons is invited to what an extended experience may prove to be a very simple and satisfactory method of healing rapidly gun-shot wounds.

G. S. Medical & Surgical Journal.

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EDITORIAL.

On the Treatment of Gun-Shot Wounds by "Hermetically Sealing."

In one of the earlier numbers of this Journal, (Vol. I., No. 4,) the attention of our readers was directed to a proposal of Assistant-Surgeon Howard, of the United States Army, first published in the "New York Medical Times," to treat gun-shot wounds of the chest by hermetically sealing the orifices of entrance and exit, and by thus preventing the entry of air into the cavity of the thorax, hemorrhage would be controlled, dyspnoea relieved and suppuration prevented.

In our present issue, we publish a communication from Surgeon Chisolm, of Charleston, South Carolina, advocating the extension of this principle to the treatment of all gun-shot wounds. The suggestion comes from one whose opinion deservedly commands the public attention, and there is about the proposed method so much plausibility, that we devote a little space to its consideration.

Many reliable observations during the progress of this war force us to conclude that gun-shot wounds do, under certain circumstances and when least to be expected, get well by the first intention.* This fact gives great weight to such a proposition as the one under consideration; for if the track of the ball is inclined to heal without suppuration, it is conceded that the process of paring away the bruised edges of the orifices, the bringing together of the fresh surfaces, and the firm bandaging of the whole limb, would greatly favor such good intention and expedite the cure.

The true difficulty, however, which arises here, and which must always be urged against such sweeping propositions in surgery or medicine is, how to tell when we may expect such a benign tendency on the part of the wounded tissues. Every observer knows that profuse suppuration occurs oftentimes when there is apparently but little laceration of the soft parts and no evidence of foreign matters interfering with the restorative forces, upon which Surgeon Chisolm and Doctor Howard so much rely. In one instance, we see a fracture of the femur in the upper-third healing by the first intention, with shortening of two inches. In another, after the orifices have closed spontaneously in a simple wound of the buttocks, the author has had repeated abscesses to form along the track of the ball, the case closing with erysipelas and pyemic fever.

With such contradictory results before him, the cautious surgeon should consider well the general condition of his patient, the character of the wound, the size of the ball and its probable velocity as it passed through the soft parts, before expecting too much from the proposed treatment by hermetically sealing the orifices of the wound.

When the wound is made by a ball at its maximum of velocity passing cleanly through the soft parts, without carrying in any fragments of wad or clothing, or fracturing bone in its route; in such instances, Surgeon Chisolm's suggestion will be, in all probability, entirely successful, for it is founded upon this important truth—that the action of the oxygen of the air upon unprotected animal tissues is hurtful and favors the process of suppuration; but remembering the many instances of suppurative inflammation in sealed cavities, lumbar abscesses, cold abscesses, and the numerous imposthumes of our past experience, we should fear to adopt in all its force the following animated language of our esteemed correspondent:

"If these incisions are carefully brought together by sutures, and the limb or trunk be supported by a roll of bandage, they will rapidly unite by the first intention, converting the track, however long it may be, into a subcutaneous wound, which will heal rapidly, without suppuration, by a process known as the remodelling process, which is well exemplified in the subcutaneous division of tendons. * * * Should quick union be obtained, comparatively speaking, a cure is effected in from forty-eight to seventy-two hours, which, under the usual conditions, will require weeks, and may not be cured for months; the patient escaping all of the dangers from hospital gangrene, secondary hemorrhage, and the common one

* Some of the most interesting of these cases are well thrown together in the paper of Surgeon Michel, compiled from the Transactions of Army and Navy Surgeons, see Vol. I., No. 8.

of protracted suppuration, followed often by contracted limbs; and, besides a large saving of human life, the government saving in hospital accommodation, in supplies for the wounded, in the avoidance of long and repeated furloughs, and in the speedy restoration of the wounded, to add to the effective strength of the army in the field. Nearly the entire treatment of the wounded should be perfected at the field infirmaries. In the few days following a battle, while the wounded are awaiting transportation, the outer orifices of their wounds can be healed, and the cases, now being beyond all danger, could be directly furloughed for a short period without going into hospital."

Surgeons in the field are respectfully requested to test the efficacy of the above method of rapidly healing gun-shot wounds, and report their results to the Surgeon-General's office.

Grand Summary of the Sick and Wounded of the Confederate States Army under Treatment during the Years 1861 and 1862.

The immense mass of reports from the army medical corps for the first two years of the war, has been carefully winnowed and digested under the supervision of the Surgeon-General, and a general summary laid before Congress at its last session. Necessarily imperfect as these statistics are, they show at a glance the herculean labors performed by the medical staff. Gathered up as the army was from homes of peace to meet the throng of the invading enemy, the amount of sickness surpasses anything on record, while the ratio of mortality is far below the usual average. The medical department—without resources of any sort, without organization, without hospitals or the furniture to equip them, without transportation, self-depending and almost self-sustaining—assumed the enormous burden which is reached in the accompanying figures, containing a few of the leading diseases of the years 1861 and 1862, and faithfully conducted their task to a satisfactory conclusion. We should be prepared to make every allowance for the many imperfect statements and confused or irregular reports consequent on the confusion attendant on these faithful public officers, whilst fighting manfully and but half equipped, with such a torrent of disease. In our next issue, when the more complete records of the year 1863 will be presented to the reader, a comparison, not without interest to all, can then be instituted.

GENERAL RESUMÉ.

From all the reports now on file in the Surgeon-General's office for the years 1861 and 1862, exclusive of the few scattering ones which have reached us from the Trans-Mississippi Department, we are enabled to sum up the sickness and mortality occurring in our armies as follows:

Continued Fevers.—Field reports, 36,746 cases and 5,205 deaths. Hospital reports, 40,565 cases and 7,020 deaths.

Paroxysmal Fevers.—Field reports, 115,415 cases and 848 deaths. Hospital reports, 49,311 cases and 485 deaths.

Eruptive Fevers.—Field, 44,438 cases and 1,036 deaths. Hospitals, 32,755 cases and 1,238 deaths.

Diarrhoea and Dysentery.—Field, 226,828 cases and 1,696 deaths. Hospitals, 86,506 cases and 1,658 deaths.

Pulmonary Affections.—Field, 42,204 cases, 3,534 deaths, and 4,538 discharges from service. Hospitals, 36,988 cases, 4,538 deaths, and 1,135 discharges.

Rheumatism.—Field, 29,334 cases and 1,142 discharges. Hospitals, 30,438 cases and 700 discharges.

Gun-Shot Wounds.—Field, 29,569 cases, 1,623 deaths, and 493 discharges. Hospitals, 47,724 cases, 2,618 deaths, and 742 discharges. Killed in battle, 8,087.

All other Diseases.—Field, 324,321 cases and 2,278 deaths. Hospital, 123,402 cases and 1,802 deaths.

Whole number of cases exhibited in the field reports during 1861 and 1862 was 848,555; of which 16,220 died and 10,455 were discharged from service. There were admitted in hospitals for the same period 447,689 cases; of which 19,359 died and 6,485 were discharged.*

We learn also from these reports that of all the cases represented as originating in the field, but 108,068 were sent to general hospitals. If this be so, the large number received into hospitals, as shown by their own returns, can only be accounted for in the repeated transfer of patients during convalescence from one hospital to another.†

It is greatly to be regretted that the interest naturally felt in medico-vital statistics, when based on accurate and reliable data, can scarcely be claimed for what is offered in this paper. Still, if it have but the effect of directing the attention of medical officers more closely and carefully to the reports required of them, it will not be altogether without good results. This is but a beginning, and the next annual report, that for 1863, will doubtless embody many facts of a much more useful and interesting character.

To the Reader.

The publishers, at great cost of time and labor, have secured a supply of paper sufficient to justify an enlargement of the Journal, commencing with the present number. These additional expenses will render it necessary to increase the price to twenty dollars for the year's subscription; which will be

* [What becomes of the loud outcry from the army against the general hospitals for discharging men in such large numbers? The figures show the proportion as 10 to 6 between field and hospital discharges. They also show still more conclusively that the number of discharged men is too small. The average number of recruits received in the British and French armies is generally about one-third of those who apply. Here, we find that in our army, collected *en masse* during the first two years of a most arduous war, only 16,000 men were discharged with a grand aggregate of nearly 1,300,000 cases.—Ed.]

† [It should also be remembered that great numbers of sick and wounded have found their way into the general hospitals directly from the field, without passing through the hands of the regimental surgeons. This has especially occurred in the campaigns around Richmond, where the general hospitals have been only a few miles to the rear of the battle-fields.—Ed.]

charged to all subscribers from and after this date. The present list will be furnished with the Journal without additional cost until the close of the year.

With more space, the editor hopes to give to his readers an additional amount of information, enough to justify the increased cost, and, having successfully opened a regular communication with the European journals, this reasonable expectation should not be frustrated. He cordially desires the assistance of the Southern profession, without which, success cannot be achieved, and shall continue to labor, with an eye singly to advance the interests of medical science.

Hereafter, there will appear in each number a Monthly Bulletin from the Surgeon-General's office, in which all important changes in the department, new regulations, and general orders will be officially published. The medical officers of the army will here find another feature of interest to advance the value of the work.

CHRONICLE OF MEDICAL SCIENCE.

ART. I.—*Lithotomy in the Female. The Various Operations, &c.*

Various operations have been proposed and practised in this disease; but many of them having proved objectionable and dangerous have fallen into disuse. The supra-pubic or high operation, being most dangerous of all, is almost entirely dismissed from the practice of surgery. The only conceivable case in which it would be justifiable would be, perhaps, one in which, with a deformed pelvis and a very large stone, contraction per vaginam was impracticable.

Dilatation of the urethra has of late years been more resorted to than any other. Its facility renders it very tempting to the surgeon, while its safety and bloodlessness recommends it strongly to the patient. The consequence is that it has caused many an unfortunate woman to pass the rest of her days in a loathsome and miserable condition. The female urethra is easily dilatable, though perhaps beyond a limited point the word *lacerable* might express what occurs more correctly. Small, and even large stones have frequently been extracted by this method without permanent injury to the functions of the urethral canal. But it is nevertheless admitted on all hands that the urethral method is frequently followed by inability to retain the urine. The dilatation paralyzes, or in some way injures, the sphincter fibres at the neck of the bladder, and this produces an incontinence, which, though it may sometimes be spontaneously recovered from, not unfrequently persists for the remainder of the patient's life. She is freed from a painful disease, but left in a condition which renders life scarcely worth having, and which science is powerless to relieve. It is impossible to say beforehand how much distension any particular urethra will endure without permanent and irreparable injury. Urethral dilatation should, therefore, be only practiced in cases where the stone is of small size.

Incision of the urethra is the next method to be considered, and any incision of this canal in a *downward* direction, which would lay any portion of it open into the vagina is wrong in principle and pernicious in practice. It gives no additional room for the extraction of a stone, and is therefore useless; while its thin divided edges are certain not to unite spontaneously, and it is ex-

ceedingly difficult to procure their union by a plastic operation. But though incision of the urethra *downwards* towards the vagina is in every way objectionable, it is otherwise as regards incisions made in an *upward* direction. By dividing the urethra and neck of the bladder towards the symphysis pubis, room may be obtained for the extraction of a moderate sized stone, without injury to any important structure, and without the disadvantage of laying one mucous channel open into another, when the two are only separated naturally by a very thin partition. Brodie, Crampton and Liston combined incisions upwards with dilatation. But if any incision of the urethra is to be made, it is better to depend upon incision alone, rather than combine it with dilatation, as by so doing the chance of incontinence would be diminished. Of all the urethral methods, the incision upwards is the only one at all deserving of confidence. It is, perhaps, not altogether devoid of the risk of urinary infiltration into the loose areolar tissue between the bladder and the symphysis pubis; but the urethra, which is situated at the bottom of the incision, forms so convenient a groove for the escape of urine that this risk is probably not very great.

The Lateral Operation.—A method which, though it cannot be called new, is not at all generally known, and not so well known as it deserves to be. It is, as nearly as the different structure of the parts will permit, the exact counterpart of the lateral operation in the male. It may be performed in the following manner: A straight grooved staff having been introduced into the bladder, an incision is to be made on the inner surface of the left nympha, commencing half an inch above the meatus urinarius, and passing obliquely downwards and outwards parallel with the cami of the pubes and ischium. This incision should be carried deeply into the space between the rami on the outside and the vagina on the inside, care being taken not to wound the vagina, which should be protected and pushed inwards towards the median line by the left forefinger introduced into the wound. With the same finger the staff should be felt for deep in the wound, and the knife should be made to penetrate the groove at a point corresponding, as nearly as can be judged, to the vesical termination of the urethra. It should then be passed onwards into the bladder, its cutting edge being turned obliquely downwards and outwards towards the left side, just as in lateral lithotomy in the male. The incision may be enlarged should it be thought necessary, as the knife is withdrawn, by a further division of the tissues in the same oblique direction. The ordinary lithotomy forceps can then be introduced into the wound for the extraction of the stone.

This operation, or something like it, seems to have been practiced by Frere Jacques. It has been condemned in succession by several writers of notice, but evidently upon insufficient grounds. Its revival, and it may be almost said, its introduction, is due to Dr. Andrew Buchanan, of Glasgow, who, it appears, has operated in this way in six cases, with very satisfactory results, both as regards the healing of the wound and the subsequent ability to retain the urine. The risk attending it is, as nearly as possible, the same as lateral lithotomy in the male, which in children we know is not very alarming. It is not likely to cause any permanent injury to the retentive power of the bladder, as no part of the bladder or urethra is laid open into the vagina; while the track of the wound, passing, as in the male, through a considerable depth of tissue, is pretty certain to heal by granulation.

The proceeding which has been described as the *vestibular operation*, which is said to have been practiced by Celsus, and which revived Lisfranc, possesses sufficient interest as one of the modes by which the bladder may be reached as not to be passed over in silence; but it is objectionable in many respects, and possessing

no independent advantages, it has been very properly laid aside. The vestibula is the triangular smooth space bounded above by the clitoris, below by the meatus urinarius and the commencement of the vagina, and on each side by the nympha. An ordinary grooved staff is introduced into the urethra, with its convexity turned upwards towards the symphysis pubis—that is to say, its ordinary position, as used in the male, is reversed. A curved incision, with its convexity upwards, or parallel with the arch of the pubes, is then to be made across the centre of the vestibular space, and the tissues intervening between the pubes above and the urethra below to be divided, until the grooved staff can be felt in the urethra near its vesical termination. The urethra is to be opened near the neck of the bladder, on its upper surface, by cutting into the groove of the staff, and the incision is to be extended through the neck of the bladder, either in the transverse or upward direction.

The obvious disadvantages of this method are, that the incision has to be made through so inconveniently narrow a space, and that the stone has to be extracted through the narrowest part of the arch of the pubes. The confined condition of the wound must also cause considerable risk of urinary infiltration about the neck of the bladder. The plan, indeed, appears to have been ultimately abandoned by Lisfranc himself.

The operation which promises the best results, when applicable, is the *vesico-vaginal*, which is described by Mr. Lane in the following manner: The patient being placed in the lithotomy position, Boyeman's speculum is introduced into the vagina, and held so as to expose its anterior wall, and a straight grooved staff is passed into the bladder by the urethra. An incision is then made into the groove of the staff, commencing just behind the neck of the bladder, and extending backwards in the median line for about an inch and three-quarters—to within a short distance, in fact, of the attachment of the vagina to the cervix uteri. Through such an incision, a stone two inches in length may be readily extracted. The edges of the wound are then brought into opposition by silver wires. No object is attained by commencing the incision at the external orifice of the urethra; indeed it cannot be too strongly urged that this canal on no account be interfered with. The incision should commence just behind the neck of the bladder; that is to say, in an adult person at least an inch and a quarter behind the external orifice of the urethra. Incision of the urethra gives no additional room, but increases the length of the wound without any compensating advantage whatever; and the urethral portion of the wound is incomparably more difficult to close than that which is deeper in the vagina.

The main objections to this operation were formerly the risk of its being followed vesico-vaginal fistula. This was Velpeau's objection. Now, however, all this is changed. The experience of the last ten years has abundantly shown that almost every case of vesico vaginal fistula, even when attended with great loss of substance, may be firmly and permanently closed by the improved plastic procedures now in use. We may, therefore, very fairly feel confidence in our ability to close the clean longitudinal incision made for the extraction of a stone, which is attended by no loss of substance, and with no cicatricial contraction or induration.

The conclusions which may be formed with regard to this operation are, that in an adult female, and especially in the case of a large stone, lithotomy through the vagina, conducted on proper principles, and followed by immediate closure of the wound, is the safest and best procedure that has as yet been devised, and deserves to be accepted as a recognized operation in surgery. It should be understood however, that it is not applicable to children; neither

is it well adapted for young unmarried women, in whom the difficulties of this operation must necessarily be greatly increased.

We will terminate these remarks by submitting for consideration the conclusions which have been formed with reference to the subject of lithotomy in the female, bearing in mind always that, though the first object is undoubtedly to remove the stone with as little risk as possible to the life of the patient, yet that it is almost of equal importance that this should be done without permanent injury to the retentive function of the bladder and urethra. These conclusions are briefly as follows:

1st. That dilatation of the urethra should only be employed for the removal of stones of very limited size; otherwise it is attended with serious risk of incontinence of urine, *that incontinence being incurable*.

2d. That incisions of the urethra in the *downward* direction should be discarded altogether. But that the incision *upwards* may be practised with little danger to life, and little risk of incontinence of urine. It is not, however adapted for the removal of stones of any considerable magnitude, neither is it well suited for children. Free incision are preferable to any combination of incision with dilatation.

3d. That the vesico-vaginal incision, with immediate closure of the wound by suture, is admirably adapted for the removal of stones in the case of adult women, in whom the vagina is of average capacity; that it is the only safe and available method for the removal of stones of large size; that it is attended with a minimum of immediate risk, and no risk at all of *permanent* incontinence of urine.

4th. That the lateral operation of Dr. Buchanan is founded upon sound anatomical and surgical principles, and is probably the best operation that can be practiced in children. It is also well adapted for young and unmarried women, in whom the small size of the vagina would contra-indicate the vesico-vaginal method. In these latter cases the choice would therefore lie between the lateral operation and the incision upwards of the urethra.

5th. That there are scarcely any conceivable circumstances which would render the high operation above the pubes justifiable.

6th. That the "vestibular" operation of Lisfranc possesses no merit of its own to compensate for its manifest disadvantages.

ART. II.—*Treatment of Inflammation.* By JOHN HUGHES BENNETT, M. D., F. R. S. C., &c.

Formerly it was supposed that the essential phenomenon of inflammation consisted in the alteration in the blood and blood vessels. The views previously detailed seek to establish that this process really consists in irritation of the extra-vascular elements of the textures, producing exudation of the liquor sanguinis. The former doctrine naturally led its upholders to maintain an antiphlogistic treatment; the latter one has naturally led to an opposite practice. There is no inflammation so well capable of testing the value of any particular treatment as a pneumonia: first, because there is none that can be determined by functional symptoms and physical signs; secondly, because the perturbation of the system and importance of the organs involved have ever, and must always, attract strongly the attention of medical men; thirdly, because it, perhaps, more than any other, has been supposed to be amenable to bloodletting and antiphlogistics. It is now eighteen years since a careful investigation into the pathology of inflammation induced me to doubt the value of the then universal practice in these cases, and this for the following reasons:

In the first place, the cause of the inflammation is an initiation of the textures—of the ultimate molecules of the part, in consequence of which their vital power of selection is destroyed, and that of their attraction is increased. The removal of blood by venesection cannot alter this state of matters—neither can other lowering remedies. If the inflammation be superficial and limited, local bleeding may relieve the congestion, as in conjunctivitis, but if exudation has occurred it cannot remove that.

In the second place, an exudation of true inflammation having occurred, it can only be absorbed by undergoing cell transformation. Now, this demands vital force or strength, and is arrested by weakness. Hence, inflammations in healthy men rapidly go through their natural course; in weak persons this is delayed; hence their fatality.

In the third place, the strong pulse, fever, and increased flow of blood in the neighborhood of inflamed parts have been wrongly interpreted by practitioners. They are the results, and not the causes of inflammation, and show that the economy is actively at work repairing the injury. So far, therefore, from being interfered with and interrupted they should be encouraged—locally by warmth, which also relieves pain, and internally by nutrients.

It follows, fourthly, that if these views be correct, our object in the treatment of inflammation should be directed towards bringing the disease to a favorable conclusion by supporting rather than diminishing the vital strength of the economy, and this not by over-stimulating, as was done by Dr. Todd, but simply by attending to all those circumstances which restore the nutritive processes to a healthy condition.

Having been guided by these views in my practice for the last fourteen years, and having seen that gradually they have been adopted by the profession, it is, I think, in my power to offer you the most convincing proof of their correctness by contrasting the results of an antiphlogistic treatment, as formerly practiced in pneumonia, with those furnished by an analysis of 105 consecutive cases that have been carefully recorded by my various clinical clerks in the Royal Infirmary.

With regard to a past antiphlogistic practice, there can be no doubt that pneumonia, during the period it was treated by bleeding, antimonials, and other antiphlogistics, can be proved to have been a very fatal malady. Andral tells us that the experience of ages has taught us to be more prodigal in the taking of blood in pneumonia than in any other disease; that there is no period of the disease, no condition of the pulse, no apparent debility of system, no age, which forbids its practice. Yet it is curious to observe that of the 65 cases of the disease he records in the "Clinical Medicine" illustrative of his treatment, no less than 36, or more than a half, die. Of the uncomplicated cases, 9 only reach the stage of engorgement, yet 2 of them die; 13 reach the second stage, and of these 5 die; 7 cases reach the third stage, and of these all die. Of the 29 uncomplicated cases, 14—nearly one half—die. He gives 36 complicated cases, and of these 22—nearly two-thirds—die.

The facts recorded by the physicians of the Edinburgh Royal Infirmary between the years 1832 and 1837, as tabulated by my former resident clerk, Dr. Thorburne, give a mortality of 1 death in 3 cases. The statistics of Dr. John Reid, in the same institution, between the years 1839 and 1849, give the same mortality of 1 death in every 3 cases of pneumonia. The numbers are—cases, 648; deaths, 222. The carefully chosen cases of M. Louis, to test the effects of bloodletting, give exactly the same results: the cases were 107; deaths, 22.

Rasori thought it a great improvement in practice when, by means of his antimonial treatment, he reduced the mortality in

cases of pneumonia from one in three to one in four and a half—that is, in 648 cases, 143 died. Grisolle, on diminishing the amount of bleeding, still further reduced the mortality to one in six and a third; and Dietl, by a purely expectant treatment, brought it down to one in thirteen.

My practice is directed to support the strength of the economy; never to weaken it in any stage by antiphlogistics, although, if dyspnoea be urgent, cupping, or a small bleeding, may be practiced as a palliative, more especially in bronchial or cardiac complication. During the febrile excitement, mild salines are administered. On the fourth or fifth day, when the fever abates, good beef tea and nutrients are given, and on the pulse becoming soft or weak, from four to eight ounces of wine daily. As the period of crisis approaches, slight diuretics are given to favor the excretory process.

The results of this practice in 105 cases of pneumonia in adults, consecutively treated by me in the clinical wards of the Royal Infirmary, during the last fourteen years, are as follows:

Number of cases, 105; deaths, 3; all complicated cases—one of intestinal ulceration, one of Bright's disease, and one (a drunkard) with delirium tremens and cerebral meningitis. Ratio of deaths, one in thirty-five cases. Average age of cases, thirty-one and two thirds years.

Single uncomplicated cases	- - - 58	duration averaged	13½ days
Double	" - - - 19	"	" 20 "
Complicated	" - - - 17	"	" 15 4-5 "
Unsatisfactory cases as to duration	8		
Deaths	- - - - - 3		

105*

Average residence in hospital of 77 uncomplicated cases of pneumonia (single and double) was twenty-two and an eighth days. (This is too high; some linger from weakness, from subsequent attacks of rheumatism, or skin disease. One remained in a fortnight after recovery, from having no shoes, &c.)

It has been supposed from this comparatively small number of cases, ranging over so long a period as fourteen years, the disease is rare in Edinburg; but it should be explained that the clinical professors are on duty alternately, and as regards myself, I have never acted as physician to the infirmary more than one half the year, and in most cases only one-third of the year. Again, it has been supposed from the small mortality that the cases there are unusually slight and trivial, or that the disease is not extensive. But it is not so. In Edinburg now, as formerly, many, and especially the double cases of pneumonia have been very severe, with great dyspnoea and very urgent symptoms. I have also frequently pointed out instances of the pulse being hard and strong in vigorous young men, in whom, however, the most rapid recoveries were invariably observed. It should also be noted that these cases were in no way selected, but do not include a few who were admitted *in extremis* at night, and never seen by the physician, nor such as were partly treated by the physicians in the hospital, and for which treatment I am not responsible.

From these facts I conclude—

1st. That simple pneumonia, if treated so as to support instead of lower the nutritive processes, so far from being a fatal disease, almost invariably recovers.

2d. That the cause of mortality in these cases is exhaustion, either before they come under medical supervision, or, as formerly practiced, from an antiphlogistic or a lowering treatment. All

bleedings that do not exhaust must be regarded as palliative rather than as curative, and their influence has yet to be determined with exactitude.

3d. That the same rule applies to all inflammations, the amount of danger being in direct ratio to the weakness of the system and the existence of complications in the disease, especially blood-poisoning.

I cannot dwell at greater length now on what it appears to me are these important results. I shall only remark, in conclusion, that in my opinion they are not the effect of chance; of empirica experiment; of a change in the nature of inflammation, or of the force of the pulse in man and animals; of an alteration in diet or of drink, or of nervous susceptibility; nor of a change in the type of disease; all of which have been supposed by some to be explanatory of facts which can no longer be denied. The more I consider this subject the more am I convinced that it is to the advance of medical science only that it can be rightly attributed, and that it is our highest privilege and honor so to consider it. Indeed, no stronger proof can be offered of the improvement in practice that has resulted from a more correct pathology, than the diminished mortality and great success which it has been shown now attend our treatment of acute inflammation.

ART. III.—*Scurvy: Its Cause.* By W. S. OLIVER, M. D., Assistant Surgeon 4th Battalion 60th Rifles.

For the following remarks respecting the cause of scurvy, I do not desire to credit myself with complete originality, nor are my assertions substantiated on my part by pathological or practical research; but so confident am I that the true cause of scurvy entirely depends on a deficiency of protein compounds, both animal and vegetable, in the food used by sufferers from that disease, that I cannot refrain from giving publicity to my views, theoretical though they be, with a hope that at some future period they may be practically verified.

My reason for making this assumption are the facts collected from the symptoms of the disease, the action of the supposed scorbutics and antiscorbutics, and the treatment adopted owing to the ill-formed theories as to its cause.

The languor and despondency, the indisposition to bodily action, the fatigue after the most gentle exercise, the sensation of weariness and aching in the limbs as from over-exertion when the patient is at rest, show clearly a depression of nervous energy that can be simulated by no known disease, but closely resembles the decrepitude of old age—that period of life when those constituents are particularly scarce which, next to water, form the principal elements of the brain tissue. The absorption of the fibrinous deposits of old cicatrices, causing re-ulcerations; the petechial spots gradually merging into ecchymoses, and constituting dangerous hæmorrhages in the vascular parts most superficial; the vertigo, palpitations, and feeling of faintness, point directly to an insufficiency in the materials of the nutrient fluid of the body, and to the elements in which that inadequacy lies—viz: hæmatin and globulin and other protein substances. Be the deficiency where it may, it must be in one. It cannot be in all, as such a coincidence would be incompatible with existence.

Claude Bernard, in his experiments on the renal vessels, has clearly shown the intimate interchange that can take place in the animal economy between fibrine and albumen, and teaches us to place but little reliance on those cases where, the other albuminoid constituents being partially absent, fibrine was found in scorbutic

* Since these statistics were made up, I have had ten other cases of pneumonia, all of which recovered; making the total number 115.

blood to be slightly on the increase, more especially when those examinations were made after previous profuse hæmorrhages had occurred.

It is unnecessary for me to deduce further proofs from the symptoms of the disease to strengthen my argument—such as the paleness and the livid leaden hue of the complexion from a deficiency of blood corpuscles, the stiffness of the joints from the absence of their natural albuminoid secretion, or the muscular wasting and debility owing to an insufficient supply of one of its chief elements, and from one of which santonine is exclusively supplied; the life-supporting current not being able to spare those requisite protein ingredients from the stream that in many cases is unable to keep the wheel of life in motion.

I shall now, therefore, briefly state my experience of the scorbutic and antiscorbutic properties of the food usually supplied on long voyages, and the inferences I am led to deduce from it, and the generally received treatment of scurvy.

To persons who are familiar with the treatment of scurvy only in print, it will seem strange when I assert, from extensive inquiry and practical experience, that few ships, even amongst the best regulated transports, pass through a voyage of more than four, or even three, consecutive months, without being visited by this loathsome pestilence. And the publicity of its presence in those instances of protracted voyages would be more generally known were the medical officers in charge not ashamed to admit such an occurrence, owing to the present popular belief that an outbreak of scurvy is impossible when strict attention is paid to cleanliness, ventilation, employment of the mind and body, and the free use of lime-juice, and other supposed antiscorbutics. No doubt *ennui*, climatic changes, moisture, uncleanness, impure air, &c., will predispose to scurvy, as they do to other diseases; but as to the generally supposed antiscorbutic properties of preserved milk, meats, vegetables, lime-juice such as we find in general use, and other specifics, I do not entertain the slightest belief.

The scorbutic properties of salt meat are, I think, undeniable, and the received theory as to its action is, I believe, the solvent power its alkalinity possesses on the albuminous components of the human tissues. This theory has been found to be incorrect, and serves to support my statement in a wonderful degree. The salting of meat does not produce scurvy directly by the introduction of saline particles into the system, but indirectly by dissolving out and removing from meat all its protein materials, which remain behind in the brine; and if men on board ship, instead of soaking the meat in fresh, and when that is not procurable, in sea water, in order to get rid of the salt, could be induced to consume the brine in their soup, puddings, &c., they would, in my opinion, be making use of the best antiscorbutic that is at the surgeon's disposal. Owing to this theoretical error as to hyper-alkalinity of the blood, pickles, lime-juice, &c. are administered with a view to its neutralization. I have seen them issued daily for four months as a prophylactic measure, and they proved as useless in that respect as they did in the cure of the disease after it had made its appearance. And what was this owing to? Not to a deficiency of acidity, for that they possessed; but to the absence of their protein elements, which in their fresh state they contained in abundance, but in this case had undergone that *eremacausis* to which protein compounds, both animal and vegetable, are so prone. The process, also, to which vegetables are subjected in pickling at large pickle manufactories, in my opinion, renders them totally useless as antiscorbutics. In order that a large stock may be ready for use at all seasons, they are enveloped in brine, and its action on them, and the results, are similar to those on meat.

It is not necessary for me to mention Garrod's and other theories on scurvy, as they have all been clearly refuted. Vegetables containing potassa also contain protein compounds in greater abundance, and it is owing to these latter constituents that plants belonging to the natural orders cruciferae and aurantiaceae claim their antiscorbutic qualities. As to the facts elicited from the practical experience of the antiscorbutic properties of preserved meats, milk, and vegetables, it is useless for me to enlarge; every medical officer who has been in charge of a large body of men on a long voyage can testify to their inefficacy; and this undoubtedly is owing to the protracted boiling, meats, vegetables, &c. are subjected to in the process of preservation and after-cooking, their albuminous substances by such means being rendered totally inert.

The backwoodsman of Canada has to work hard, and subsist on boiled potatoes, biscuit, and salt meat, all not of the best description. The protein waste of the tissues of their frames is greater than the salt pork, the boiled potatoes, and the old gluten biscuit can supply, and scurvy in consequence is frequently rife among them. Their infallible cure for the disease is eating the potatoe raw instead of boiled. For a similar reason milk, preserved on Appert's principle, is almost totally useless. Children fed on it for some weeks actually loathe its taste; for the cause of this, and the method adopted for its primary and secondary preservation, see Hassall's "Food and its Adulterations."

There are many incidents connected with the early history of scurvy, and its occurrence on land, that I could produce to strengthen my argument, but that seems to me superfluous. I shall conclude these remarks by surmising that the only link now required in this chain of assertions to convert them into a reality is a thorough chemical investigation of the nervous, muscular and albuminoid tissues of those who have died of scurvy, for a deficiency of protein compounds, and an analysis of the urine of scorbutic patients for the absence of urea. I certainly could not detect urea in the urine of fourteen such cases (not complicated with Bright's disease), and little, if any, protein compounds in the articles of ship's diet specified.—*Lancet*.

ART. IV.—*Clinical Lecture on Gonorrhœa and Imaginary Spermatorrhœa*. Given at St. Mary's Hospital, June 14th, 1861. By THOMAS K. CHAMBERS, M. D., etc.

The poison of gonorrhœa, as a rule, attaches itself to the urethra alone, and (like all animal poisons on mucous membranes) has a tendency to run a definite course, to exhaust its virulence by the formation of pus, and so to cure itself. I always, therefore, leave these hospital cases quite alone for your instruction; and, if they are recent, you see them get quite well of their own accord; sometimes in four or five days, as happened in the case before us; sometimes after a longer period; but always without any unfavorable symptoms. The fact is that gonorrhœa is naturally, in both male and female, a most mild disease, with power to get well in about a fortnight by the simplest treatment, if only it is not made severe by the folly of the patient or his medical attendant. I consider all primary heroic treatment of urethral discharges a most unjustifiable interference with nature. Doubtless a good many patients are tough enough to bear without ill consequences local tampering with urethra; but very frequently you will have stricture and swelled testicle follow, and every now and then you will have a result which

will weigh on your conscience for the rest of your lives. You may have the blood of a fellow creature on your head.

Capable as the urinary mucous membrane is of taking care of itself and getting rid of poisons which are in a manner natural to it, it resents foreign irritants; and it resents them most particularly when it is not guarded by a purulent coating and is in a healthy state.

Real spermatorrhœa is a most rare, almost unknown disease. If you ask all the physicians and surgeons of prominent standing, the hospital staffs in this metropolis, they will tell you they are doubtful if they ever saw a decided case. But of *imaginary* spermatorrhœa they have almost daily instances in private practice. Persons whose minds are unhinged with the horrid suggestion are constantly coming before them; and if the poor creatures will confess to the source of their impression, it may generally be traced to the reading of beastly books or advertisements in the newspapers. You could scarcely imagine how enormous is the circulation of these publications; under specious titles, they are advertized at the cost of about £20,000 a year, and are sent all over the globe. When traveling with the Prince of Wales two years ago, I found them wherever I found Englishmen; and a captain in Her Majesty's navy told me he had caught them in the hands of his midshipmen in the Mediterranean.

The nature of the cases under the delusions of these ingenious traps, and presenting themselves to you as spermatorrhœa, are various. There are:

1. A gleety discharge from slight stricture.
2. A similar discharge from pure debility, exactly analogous to leucorrhœa in the female. This is common in the active minded, who use much mental exertion at night, such as students cramming for examination, etc.
3. Incapacity to complete the generative act from mental agitation. This happens to new-married men from modest respect, and to the unmarried from consciousness of sin, and disgust towards the female. The same mental agitation produces simultaneously indigestion and a deposit of lithates in the urine, which is then supposed to be semen.
4. Nocturnal pollutions, arising solely from the habit of oversleeping; but rarely affecting the health, except secondarily through the mind.
5. Slight epileptic fits.
6. Simple delusions, grounded on no symptom, but taking this form on account of the secret publicity given to the gross exaggerations and falsehoods contained in the books I have alluded to.
7. The fallacies which harass these poor people are often the more deeply ingrained by the consciousness of dirty habits in their boyhood, though probably those habits have been long left off, and have never been practiced to the extent of injuring the health. But sometimes you will find patients complaining of "spermatorrhœa," half with the idea of deceiving, and half as a euphemistic way of telling you that they are still addicted to self-pollution.

ART. V.—*Action of Medicines on the Urinary Secretions.*

A chapter on the variations of the urinary secretion by the action of medicine in the recent work on this subject, by Dr. Edward Parkes, (London, 1861,) affords a curious il-

lustration of the facts of modern physiological science. What service this diffident excrete has rendered to physic in the days of blue-bottle mystery; what lives have been saved by it in spite of the labeled elixir that required such noted shaking before the kidney received its contents to cast them to the dogs, let the succeeding epitome of our author's inquiries in this direction explain.

Antimony emerges, in part or altogether, by the kidneys. Its mode of combination is uncertain, and the rate at which it passes out is also unknown.

When the salts of arsenic, lead and copper are taken, the metal passes off partly by the urine. Salts of iron, especially, augment largely the iron of the urine. Lead, although it may pass off in large quantities, does so much more slowly. Copper passes off by urine as well as in the fæces.

Mercury passes off largely by the kidneys; but it is yet not proved that, under the influence of this drug, temporary albuminuria is a result.

Silver, in part, issues by the kidneys. The combination in the urine is not known.

Zinc, according to Schlossberger, may be detected in the urine after administration of the oxide. But the quantity is small; and, in the opinion of Heller, nil. Zinc is excreted in by far the largest quantity by the fæces.

Sulphur passes off by the urine in part, at least, as sulphuric acid, and in part uncombined.

Sulphuret of potassium, when not taken in too large a quantity, is oxydized, and appears as sulphate of potash in the urine.

Iodine appears very rapidly in the urine after being taken, and is in combination probably with sodium.

Sulphuric, nitric, phosphoric and hydrochloric acids, all emerge by the kidney, and augment the acidity of the urine. This effect increases with the increase of the dose. The acids take alkali from the system; phosphoric acid seems to take potash; sulphuric acid, soda and potash. The combinations of hydrochloric and nitric acids are unknown. According to Eylandt, all these acids pass out in twenty-four hours.

Oxalic, tartaric, citric and acetic acids are converted in the system into carbonates. Citric and acetic acids appear to be entirely destroyed; oxalic and tartaric in most part. All increase the acidity of the urine, chiefly by the formation of carbonic acid, which in part appears in the urine.

Benzoic acid, and all substances containing benzoyl, or oil of bitter almonds, cause the appearance of hippuric acid. There is now no doubt that this occurs from the combination of benzoic acid and glycin. This combination probably takes place in the hepatic cells. Cinnamic acid, and balsam of tolu, which contains it, also produce hippuric acid. Nitro benzoic acid produces nitro hippuric acid.

Gallic acid passes unchanged into the urine; Dr. Parkes thinks that it does not influence the elimination of urea or of uric acid. Pyrogallic acid passes unchanged.

Tannic acid passes off by the urine in the forms of gallic and pyrogallic acids, and perhaps of a saccharine body.

Uric acid and the urates of potash or ammonia cause a considerable increase of urea, the acid being converted almost, if not entirely, into carbonic acid and urea.

Hippuric acid passes unchanged in the urine.

Lactic acid is decomposed, perhaps even in the stomach. Whether or not it is transferred into the urine is uncertain.

Liquor potassæ passes out of the system by the urine probably in six hours, with increase of secreted water. The condition of the urea is doubtful; the uric acid is apparently unaffected; the pigment seems not to be increased; the chloride of sodium is sometimes increased; the sulphuric acid is increased; the phosphoric acid is increased, the alkali apparently passing off in combination with these acids; the free acidity of the urine is lessened.

Ammonia appears to be transformed into a salt in the body, and to pass off as such, principally as chloride of ammonium. An hypothesis has been raised that ammonia is oxydized in the system, and appears as nitric acid in the urine. Dr. Parkes records that the point is undecided, but rather favors the hypothesis. The evidence on which the speculation rests is innocent, but naturally not robust.

The carbonates of soda are rapidly excreted by the kidneys, and render the urine alkaline more or less quickly. The soda is probably excreted in the form of carbonate or bicarbonate. Nitrate of soda passes out by the kidneys; phosphate of soda and phosphoric acid have actions which bear a certain resemblance to each other. Phosphoric acid, when taken pure, passes out combined. The alkali it carries out is almost entirely potash; the acid does not take lime or magnesia. As in passing out of the system it removes potash, it might be presumed, says Dr. Parkes, that the administration of phosphoric acid would tend to carry away so much base as to "de-alkalize" the body; but this presumption is incorrect, for Boeker has discovered the singular fact that the acid ($P O_3$) diminishes very greatly the elimination of chloride of sodium—to such an extent, indeed, that, in spite of the increased excretion of potash, the total amount of alkali leaving the system is diminished: the same effect is produced by the phosphate of soda. Phosphate of soda also causes a diminution in the amount of urea and of water; but phosphoric acid has no such effect. The acid increases the amount of iron; the salt does not. Phosphate of soda is not a diuretic, but the reverse.

Carbonate of potassa renders the urine alkaline. It is not yet known whether or not the potash leaves the body in any other form than that in which it entered. Although this salt makes the urine alkaline, it augments in some diseased conditions the acidity of the urine; for the acidity of the urine is found, after the salt has been left off, to be greatly increased.

Nitrate of potash is very rapidly excreted by the urine, the acidity of which it does not destroy. According to Biegel, the nitrate does not increase metamorphosis in health, nor yet act as a diuretic. Dr. Parkes does not altogether endorse this opinion.

Acetate of potash, which, as the late Dr. Golding Bird taught, was supposed to increase the excretion of urinary solids, seems, by later observations made on healthy men, to lessen such excretion. Yet certainly the acetate of potash will sometimes increase the elimination of water. The acetate is invariably transformed into the carbonate in the system, and renders the urine alkaline.

The citrate and the tartrate of potash produce, like the acetate, alkalinity of urine from the formation of carbonate; the amount of free carbonic acid is also greatly increased.

When iodide of potassium is taken by the mouth, iodine can speedily be detected in the urine. The salt is eventu-

ally almost entirely excreted by the kidneys. Possibly also, but the point is not proved, this salt increases the amount of urine. Iodide of potassium eliminates mercury from the body.

Chlorate of potash, in large doses, increases the acidity of the urine, and is said by Isambert to cause a more free deposit of urates and pigment.

Sulpho-cyanide of potassium passes out unchanged, and ferro-cyanide of potassium becomes ferri-cyanide.

The salts of ammonia pass out of the urine unchanged, and Boeker states that the chloride increases all the constituents, except the uric acid, which it slightly diminishes. The tartrate of ammonia does not increase the acidity of the urine.

The influence of phosphate and of lactate of lime on the urine is not correctly known.

Chloride of calcium causes an increase in the amount of lime; the magnesia is slightly increased, and the acidity is lessened.

Quinine and cinchonine pass off by the urine in part. In healthy persons, quinine appears in the course of two to five hours. In some diseases the excretion of the alkaloid is much delayed; this obtains in intermittents. Some quinine is always destroyed in the body, and Ranke observed that the amount of uric acid was materially lessened during the administration of the disulphate of quinine. The urea remains unaffected.

Morphia, in great part, passes unchanged into the urine. This drug, as well as opium, produces rather variable effects in regard to the amount of water; the solids appear to be always decreased.

Belladonna increases, rather than diminishes, the urinary water, the urea, and the extractives. Atropine passes off, in part at least, by the urine, from which it can be recovered.

Digitalin, when taken in doses of seven one-hundredths part of a grain a day, cannot be detected in the urine. Under the influence of digitalis, the water would appear to be increased, the fixed salts lessened, and the organic solids unaltered. The action of the drug differs in health from that which follows its administration in disease, a difference perhaps explained by its action on the heart and great vessels.

Strychnine passes off in part by the urine, though whether all that is taken can be recovered is not known. The effects on the constituents is also unknown. Veratrin and nicotin are not proved to be diuretics.

Colchicin and colchicum affect the quantity of urine variably. The urea and the uric acid, the volatile salt, extractives, and earthy phosphates are all lessened, according to some observers; but the facts are not complete as a whole. Dr. Parkes sums up by saying that colchicum rather lessens than increases the water—perhaps from its action on the bowels; it produces rather a lessening than an increase of urea and uric acid, and its effect on the other constituents is unknown.

The action of squills and juniper is as yet not absolutely determined.

Salicin passes off in part by the urine in the undecomposed state, and is in part decomposed; it would seem to take oxygen from the body both by direct metamorphosis, and also by supplying sugar, which is oxydized and turned into carbonic acid and water.

When amygdalin is taken into the body in large quantities, formic acid is detected in the urine. Mannite taken by the stomach is passed in small part—one-tenth—by the urine; the remainder is decomposed either in the stomach or intestines, being converted into lactic acid. Glycyrrhizin goes off entirely by stool, and does

not appear in the urine. *Amanita muscaria* passes off unchanged in the urine, communicating to that fluid intoxicating properties.

Copaiva consists of three parts—an ethereal oil, a resinous acid, and a neutral resin. According to Weikart, the ethereal oil does not appear in the urine, but the resinous acid (copaivic), which forms 40 per cent. of the balsam, is eliminated to a large amount. Weikart suggests that the action of this acid on the mucous membrane is attributable to its effects on the fatty acids contained in the pus-cells formed by the inflamed membrane; the cells become shrivelled, and their nutrition and growth arrested.

Creasote may, perhaps, give rise to carbolic acid, as a dark colour of the urine is sometimes seen after its use. Turpentine gives a violet color to the urine; its effects on the urinary constituents are not known.

Cod-liver oil, according to Beneke, invariably lessens the free acidity of the urine; an action ascribed by him to the lessened disintegration of the nitrogenous tissues.

Cantharides, in medicinal doses, sometimes increases, sometimes decreases, the amount of urine; its further effects are as yet undiscovered.

OBITUARY.

The Surgeon of the Alabama.

David Herbert Llewellyn, who perished in the noble performance of his duty in the late action off Cherbourg, was the son of the Rev. David Llewellyn, perpetual curate of Euston Royal, Wilts. He was educated at Marlborough College, was an articled pupil of Dr. Hassall, of Richmond, and subsequently studied his profession at Charing-Cross Hospital, from 1856 to 1859. He was Silver Medalist in surgery and chemistry. Of a generous and ardent disposition, he gained the esteem and regard of all his fellow-students. He was with the Alabama throughout the whole of her eventful career, and was much respected by all on board. We are enabled to give a copy of the last letter which we believe he ever wrote. It was addressed to Mr. Travers, the resident medical officer of Charing-Cross Hospital, and is as follows:

CHERBOURG, June 14th, 1864.

"DEAR TRAVERS.—Here we are. I send this by a gentleman coming to London. An enemy is outside. If she only stays long enough, we go out and fight her. If I live, expect to see me in London shortly. If I die, give my best love to all who know me. If Monsieur A. de Caillet should call on you, please show him every attention." I remain, dear Travers, ever yours,

D. H. LLEWELLYN.

How poor Llewellyn did his duty as a man and a surgeon may be judged by the following touching episode which was seen to occur during the late battle: "The whaleboat and dingy, the only two boats uninjured, were lowered, and the wounded men placed in them, Mr. Fulham being sent in charge of them to the Kearsage. When the boats were full, a man who was unwounded endeavored to enter one, but was held back by the surgeon of the ship, Mr. Llewellyn. 'See,' he said, 'I want to save my life as much as you do; but let the wounded men be saved first.' 'Doctor,' said the officer in the boat, 'we can make room for you.' 'I will not peril the wounded men,' was his reply." He remained behind, and sank with the ship—a loss much deplored by all the officers and men.

Noble and self-denying as was the conduct of the late surgeon of the Alabama, we are proud in the conviction that the same chivalrous spirit animates the medical officers of the united services of this kingdom. There has been much talk of their being "non-combatant officers;" but where are we to look for greater heroism

or self-devotion 'even at the cannon's mouth.' And yet Llewellyn was the type of a class whom the Admiralty and the Horse Guards have thought fit, by every means in their power, to degrade and insult. No wonder, under such circumstances, that the service is now so unpopular that there are more than 200 vacancies which cannot be filled up. The cause in which the real hero of the late naval duel perished is not one which can be acknowledged by any national testimonial; but we are glad to hear that his fellow-students contemplate the erection of a tablet to his memory in the hospital in which he so greatly distinguished himself, and in which his kindly and generous spirit had gained for him the greatest esteem and affection. It would be a fitting monument to his memory, and we trust that it will be placed in so appropriate a position.—*Lancet*, Aug, 1864.

INTERESTING ANALYSES OF ARTICLES IN FOREIGN JOURNALS.

Parisian Medical Intelligence.

I do not intend to go over the details of that sad affair which brought its author to a bloody end—I mean the trial of *Conty de la Pommerais*. After creating immense sensation and keeping the public mind in breathless anxiety, first as to the decision of the jury, and then as to whether the penalty which had been pronounced would be commuted or not, everything ended in the execution of the unfortunate man, which took place before an immense multitude, even more boisterous perhaps than it usually is on such occasions, and as little edified as ever by the ghastly spectacle. Of course, the whole details of the drama, from the first rumor of the murder to the bloody expiation, formed the bone and sinew of all newspaper chronicling during the time it lasted. Some papers, foreign to our profession, seized the occasion to expatiate on the duties and dangers of the medical profession; but the special medical journals here very sensibly abstained in general from all reflections and commentaries on the subject, and contented themselves with presenting the bare facts to their readers. That affair has given rise to many important questions, and amongst others it has revived the discussion as to the necessity of abolishing the punishment of death. A certain number of political papers took up the theme and argued in an affirmative sense; and it is said that a petition asking for the abolition of that penalty is in circulation amongst the people, and already bears more than a hundred thousand signatures. You are aware that the well-known M. Dupin, attorney-general at the *Cour de Cassation*, in a lengthy discourse which he delivered when the case of *La Pommerais* went before that tribunal, and which has, I believe added nothing to his reputation, attacked in the strongest terms the principle of life insurance, declaring it to be a barbarous custom, unworthy of a civilized people, and productive of the greatest evil. Such does not seem to be the general belief here; it is thought, on the contrary, that the principle of life insurance is a product of civilization, a wise and prudent measure, and a custom too deeply rooted to be overthrown by the spirited but specious argumentation of M. Dupin. The question has, however, been incidentally agitated here in the medical journals and among the profession whether it would not be more becoming the dignity of a medical practitioner to abstain from life insurance, and thus free himself *de facto* from the slightest suspicion of dishonesty and fraud. M. J. Guerin expressed that opinion in an article published in the *Gazette Medicale*. I believe that such, on the contrary, would be a very unwise feeling; and that the adoption of such a course, far from serving our dignity, would be a weakness unworthy of our profession. The very fact of entertaining such an idea is beneath our dignity. Such, I

am happy to say, has been the opinion of the generality of papers which took the pains of answering M. Guerin. It is not because a La Pommerais and a Palmer have disgraced their title and abused their position that the whole medical corps, numbered by thousands, should renounce the rights and advantages which belong to all free and honest men.

During the last two months, of April and May, acute diseases of the respiratory organs still prevailed in the different hospitals of Paris, but since the beginning of this month they have steadily decreased. At the same time the eruptive fevers, and principally measles, made their appearance, particularly in the children's hospitals. There the cases of croup are now far rarer and more benign.

Scarcely had the last wreaths of smoke which ended those fiery debates on the origin and nature of vaccine vanished away into the air, at the Academy of Medicine, when that learned body again set to work, and on a subject equally exhaustless and far less useful. MM. Gavarret, Bouillaud, Barth, &c., are thundering in eloquent peals against the unfortunate M. Beau and his theory on the sounds of the heart. Why throw away so much eloquence, and of the best? M. Beau's theory had already fallen; it had enlisted but a few straggling followers—it cannot stand the test of any severe examination, anatomical, physiological, or pathological. Yet does he manfully keep his ground against his numerous opponents. It is impossible to show a better countenance in a worse cause. I am much afraid that after so many eloquent speeches and multiplied efforts, M. Beau's conviction will remain the same; and I am pretty sure that were it not for the *galerie*, his adversaries would have spared themselves the exertions they have made to plead a cause already judged by the public.

Professor Laugier, one of the surgeons of the Hotel Dieu, has recently made a most important communication to the Academy of Sciences. In an operation performed on the arm, and in which the median nerve had been severed, that skillful surgeon united by a suture the two ends of the nerve. Almost immediately after signs of sensibility were observed, and in a few days more the nerve had entirely recovered all its properties of sensation and motion. I need not insist on the importance of this case, which throws such a new light on physiological pathology of the nervous system. No longer than two weeks ago, in a discussion which took place at the Society of Surgery, it was affirmed by several members that the regeneration of the nervous tubes, which alone could cause the recovery of sensibility and motility, was the work of weeks and months, and could not immediately take place. Such, also, was the opinion of M. Brown-Sequard and of MM. Vulpian and Philippeaux. These two gentlemen published last year a memoir which received academical honors, and in which they gave the relation of different experiments they had made, the result of which is entirely opposed to that recently obtained by M. Laugier. The memoir of that eminent professor, read at the Academy of Sciences, has been the scientific event of the week.—PARIS, June 28, 1864.

The Value of the Bromide of Ammonium as a Remedial Agent in Certain Diseases.—The physiological effects of the bromide of ammonium formed the subject of a communication, by Dr. Gibb, at the late meeting of the British Association for the Advancement of Science, at Cambridge. They were shown to be such as to demonstrate its value in a number of diseases in which the nervous system is functionally engaged, especially the ganglionic, accompanied by pains of a moderate character. The mucous membrane of the entire body is brought more or less under its control, according to the dose and the mode of its administration. In some of the milder forms of skin disease it has also been found to be very serviceable. As an absorbent in glandular and other enlargements, it is not inferior to its sister salt, the bromide of potassium, whilst it is superior in some respects in the treatment of some other forms of disease. Dr.

Gibb has under his care at the present time several cases of epilepsy in which very marked benefit has ensued from its use, in arresting and diminishing the number of fits. In mild forms of oophoritis, with its attendant symptoms, the bromide of ammonium has sometimes dispelled the latter as if by magic. Trembling, nervousness, and general uneasiness, quickly subside under its use. It acts as an antispasmodic in this respect; for it not only calms irritation, but allays nervous excitability. This has been particularly observed in various experiments, and affords sufficient encouragement to proceed with a trial in more severe cases of nervous malady than have passed through Dr. Gibb's hands.

Its effects on the mucous membrane of the eye were tested in treating cases of strumous ophthalmia in the young. These were found to be remarkably beneficial and decided. In one instance, that of a girl aged twelve, the subject of strumous conjunctivitis and corneitis, with leucoma and other opacities, accompanied by great intolerance of light, which had resisted treatment, off and on, for five years, a cure resulted in five weeks under small doses of this salt; and, what was hardly expected, the opacities were actually diminishing when seen seven weeks afterwards.

The bromide of ammonium possesses some absorbing influence upon atheroma, fat, and allied compounds. Individuals who took it in quantities ranging from two to ten grains, thrice a day, were either in a state of moderate corpulency, or possessed the atheromatous expression. The former, whilst the general health continued impaired or improved further under its influence, seemed to get thinner, their adipose development became decidedly less, the secretion from the oily sudoriferous glands was much modified and diminished, and altogether there was an improved appearance in the countenance, which the persons themselves were aware of. This was not less marked in those undergoing atheromatous changes, and there was seen in them besides a decided clearness of the eye; the face was brighter, the integument not being so greasy; the mind seemed more active, and the bodily energy was greater.

Weight of the Viscera on the Right and Left Sides—The weight of the right side of an adult of average size is twenty-two ounces and three-quarters heavier than on the left; and as this is reduced by about seven and a quarter ounces by the contents of the stomach, there is a clear preponderance of fifteen ounces in favor of the right side; the centre of gravity of the body is therefore on the right side of the middle line.

Lithotomy in Russia—According to the reports of the civil hospitals in Russia, for a given period, there had been 231 cases of lithotomy, of which 194 terminated in recovery, and 37 in death. During the same period there had been only five cases of lithotrity, all of which were successful. This marked disproportion of the cases in which lithotomy and lithotrity were employed is striking, and suggests the question whether lithotrity might not have been resorted to in some of the cases in which the more formidable and dangerous operation was employed.

M. Salmon's Operation for Hæmorrhoids.—This operation is intended to combine the advantages of excision and ligature, and to avoid the positive objections to both. It consists of a separation of the hæmorrhoidal tumour from the subjacent parts for about the lower three-fourths of its extent, leaving it attached by the remaining upper-fourth, which is then included in a ligature. The tumours are drawn down by means of a hook with four prongs, contrived for the purpose, and the division of the lower part of them is made with scissors. These structures are always supplied with vessels which descend from above, close beneath the mucous membrane, and the trunks being necessarily included when the upper part of the tumour is tied, all danger of bleeding from the divided branches is avoided. By this proceeding, the smallest possible

amount of tissue is included in the ligature, and what is included is as far as possible removed from the anus. This latter circumstance is believed to be a great advantage, for the membrane an inch within the anus possesses little of that acute sensibility which characterizes the integument close to that aperture. In Mr. Salmon's operation, the subsequent pain and irritation are very much lessened, and in evidence of this it is rarely found to extend so far as to involve the urinary organs; whereas, retention of urine, according to experience, is the rule, rather than the exception, after the ordinary operation with the ligature.

Strychnine in Prolapsus Ani.—M. Foucher, surgeon to the Foundling Hospital, has lately made public the results he has obtained by means of subcutaneous injections of sulphate of strychnia in the prolapsus ani of children. This not uncommon affection is frequently found to be very obstinate, and to resist for a length of time the astringent injections and other such means ordinarily resorted to for its removal. M. Foucher's method is to insert the canula of a Pravaz syringe at a point one-third of an inch outside the anal aperture, and to inject ten drops of a solution composed of three grains and a half of sulphate of strychnia dissolved in six drachms of distilled water. In one case, after two injections, performed at an interval of twenty-four hours between each, the cure was permanent. In a second case, one application sufficed; in a third case, two injections wrought a cure; and in a fourth case, a successful result was attained by one alone. M. Foucher's method, he says, perfectly painless and exempt from danger, is therefore worthy the attention of the profession.

Nævus Treated by Puncture with the Hot Needle.—Surgeon J. C. Wordsworth, of the London Ophthalmic Hospital, reports a case of nævus treated in this manner with entire success. The case was that of a child eight months old, and the disease affected the whole of the left upper eyelid to such an extent that its motions were much impaired, and it was stated that the growth was rapidly increasing. The skin of the lid was of a dark red color, and completely involved in the nævus; the mucous lining, too, was found to be marked by large vessels, being evidently part of the nævus that penetrated through the tarsal cartilage. When the child cried, a considerable swelling became apparent. The case was considered well adapted for treatment by the hot needle, and the surgeon ventured to promise a complete recovery. A few inspirations of chloroform produced full anæsthesia—a condition most desirable for such an operation, for many reasons. A needle, on which is a bulb about one-third of an inch from its point, intended as a reservoir for heat, and set in a handle, was heated to dull redness in the flame of a spirit-lamp. The eyelid was raised from the globe by means of an ivory spoon, inserted into the palpebral sinus, so as to protect the eye as well as to form a firm basis for the lid. A considerable number of punctures was then made through the entire substance of the lid, the needle being heated as often as necessary during the operation. In this way all the large vessels of the lid were apparently closed by the heat of the needle, punctures being made over its entire extent, at distances of about one line apart. Wet lint was applied, and the case treated as a burn. Adhesive inflammation ensued, producing induration and subsequent contraction of the substance of the lid. In a month from the operation the nævus was reduced to a few scattered vessels over the lid which had escaped the influence of the cautery; and as they produced some deformity, and might probably increase in size and number if left, a few punctures were made around them. From that time the case required no farther treatment, the nævus having completely disappeared, leaving scarcely a trace of deformity.

Vesico-Vaginal Fistula. Result of Fifty-Five Cases. By J. BAKER BROWN, F. R. C. S.—In the author's mode of operation no clamps

or bars are used. The knives employed are two—one for the right hand and one for the left. The needles, of various curves, forming a series of fourteen in number, are on the same principle as Startin's, but of rigid material. They are armed with wire, and thrust through the pared edges, great care being taken to avoid the mucous coat of the bladder. The two ends of the wire are simply twisted, and so fastened. The patient is afterwards laid on the side, and a male elastic catheter, with bag attached, kept in the bladder. She is kept quiet ten or fourteen days, and the wires removed. The operation is often completed in ten minutes. Of 55 cases treated, 53 were operated upon by the author, 1 by Mr. Nunn, and 1 by Mr. Harper. Of the total number of operations, 43 were followed by perfect cure, 1 was much relieved, 2 died, 5 were not cured, and 4 are still under treatment, with every prospect of cure. Of the 43 cures, in 24 this result followed the first operation, including the cases of Mr. Nunn and Mr. Harper; in 8 the cure occurred after the second operation; in 5 after three operations; and in 6 after more than three operations. Of the 2 fatal cases, 1 died eighteen days after the operation, apparently from exhaustion, the age of the patient being fifty-six; the other died seven days after from pyæmia.

In all of his cases the author attributes the lesion to protracted labor, and not to the use of instruments or deformity of the pelvis. He states that vesico-vaginal fistula would scarcely or never occur if a labor were not allowed to become protracted.

Opium an Antidote to Strychnine. By J. R. WINTER, M. R. C. V.—As strychnine is so commonly used for the poisoning of animals, it frequently happens that our dogs, either from accident or design, get destroyed by this agent. A large dog picked up some strychnine, and showed the usual and unmistakable symptoms of having taken a large and destructive dose—curving of the back, rigid extension of the limbs, &c. In order to save pain, and with a view to kill in an easier way, a good dose of tincture of opium was immediately given. To my surprise and gratification the paroxysms appeared to subside. This encouraged me to give more opium; and in the whole he got about five drachms of the liquid opiate, seemed a little drowsy, was left to sleep, and found in an hour afterwards quite well.

Shortly after this another dog was heard at night knocking himself violently about amongst buckets, boxes, &c. He was secured, and being evidently suffering from the same active poison, I administered the like remedy to him. In this case there was more difficulty to get the animal to swallow the opium; but sufficient was from time to time got down his throat, and after four hours of dreadful suffering he likewise recovered.

Post Partum Hæmorrhage—Transfusion—Successful Result.—Having been summoned to a midwifery case, Mr. Thorne found that a fœtus had just been expelled, which was the result of about seven months' gestation, and had evidently been dead for some considerable time. In a few minutes symptoms of internal hæmorrhage came on, and firm pressure was made over the uterus in order to expel the placenta. This was done three times, and each time it was followed by a considerable gush of blood. Mr. Thorne consequently introduced his hand into the uterus, and finding the placenta nearly entirely adherent, he detached it, and having placed a firm pad over the uterus, all hæmorrhage ceased. The patient, however, was nearly pulseless, exceedingly pallid, and evidently suffering from the loss of blood, and in consequence brandy and water was administered; on account of vomiting, however, it was discontinued. She gradually got worse and worse; twice breathing ceased, but was restored by artificial respiration. An enema syringe being obtained, half a pint of hot brandy and water was thrown into the rectum, but without any effect; and then, seeing that she was evidently dying, Mr. Thorne proposed to her friends,

as a last resource, the operation of transfusion. It was at once consented to, and a young woman having volunteered to give up a little blood, the operation was performed; but owing to the loss of some blood, and the young woman fainting, only about two ounces were gotten into the patient's median cephalic vein. This, however, seemed just sufficient to stimulate the heart to renewed action; for before beginning life was almost extinct, and the pulse at the radial could scarcely be detected, whereas ten minutes afterwards the pulsations of the temporal artery were very distinct. During the next six hours she had two injections of hot brandy and strong beef tea, and after this she was fed every quarter or half hour for the next forty-eight hours. Twelve hours after the operation there was considerable thirst and pain in the head, dry, brown tongue, pulse 112, rather full and sharp. All symptoms of re-action soon passed off. She was kept for ten days on strong fluid nourishment. On the eleventh day she ate a mutton chop, and since then she has steadily improved, and at the present time only complains of debility.

Total Irideremia.—John T—, aged twenty-two, a pallid but otherwise healthy man, for many years a sailor. The corneæ were clear, of normal size and shape; the scleroticæ white and healthy; the lenses, when reflected lights were thrown on them, showed deep-seated opacities; the globes were unsteady, always in motion; palpation healthy; no photophobia; no ptosis of either lid; and by the ophthalmoscope no vestige of iris was to be seen. The opacities were chiefly capsular on the posterior part of both lenses, and slight central opacities on their anterior surfaces, not extending deeply into the structure of the lenses; the shaded edges of both lenses were clearly to be traced, leaving a narrow ring of red, illuminated fundus all around. The optic disc and fundi of both eyes appeared healthy; he could see to read at about six inches. As a sailor, he regularly took his duty of steering by compass, both by night and day. The sight was not improved by concave or convex glasses, or by the use of an artificial diaphragm. Objects were best seen in a subdued light. There was no imperfection in any of his family. The state was congenital. His sight does not get worse.—*Lancet*.

Anastomosis.—M. Sucquet has, by means of injections, shown that, independently of the capillary continuity of circulation, there exists in different regions of the body certain constant and determined connections, by means of transverse branches, between the small arteries and veins, which can be observed without the aid of the microscope. This mode of communication had already been noticed in the skin of the batrachians by M. Fred. Dubois, but its occurrence in the human body was unknown. M. Sucquet has also called attention to another curious anatomical fact, also new to science—namely, that in other cases a small artery, instead of breaking up into terminal branches like its neighbors, may be seen simply to make a bend upon itself and return parallel to its original course, having become a vein, and increasing in size as other veins, neighboring veins come to inosculate with it, when it constituted the principal afferent vessel of the part. The regions in which the above vascular peculiarities have been noticed are, the skin of the fingers (more especially at their tips) and of the thenar eminence of the wrist; also in that of the elbow; on the surface of the aponeurotic expansions of the extensor tendons; on the ligaments of the hand, wrist and elbow; in the skin of the toes and soles of the feet; in the skin of the knee, round the patella, where filiform arteries accompanied by veins, with which they communicate freely, abound; on the surface of the tibio-tarsal ligaments and those of the knee-joint; in the skin of the lips, nose, eyelids, eyebrows and ears; in the mucous membrane lining the nasal fossæ; and, lastly, in that on the tip of the tongue. The knowledge of the above facts must be most precious to the physiologist; and

although the application and bearing can hardly at present be estimated, yet we may look upon M. Sucquet's investigations as a most important step towards a clearer insight into those mysterious laws which regulate the nutrition and repair of the tissues, and the maintenance or restoration of circulatory equilibrium.—*Académie Impériale de Médecine*.

Blisters in Varicose Veins.—Mr. Ure uses blisters successfully in this disease. He considers that they cure by causing contraction of the veins and the deposition of fibrine into the surrounding areolar structures. He has found his cures to be permanent, even in persons of advanced years.

Embolism.—In a communication on this subject before the Royal Medical and Chirurgical Society by Mr. Sibly, the author proceeded to describe the phenomena which followed the sudden obstruction of an artery. The complete arrest of circulation, the attempt at its restoration, and the reason why, in cases of the brain, spleen and kidney, this attempt is not successful. The partially restored circulation is characterized by a zone of enlarged vessels around, and by a low form of inflammation in the part affected. In consequence of this the nutrition of the part is damaged, and fatty granules accumulate among the cell structures, thus causing the bright yellow color which is seen in the so-called fibrinous deposits. As the circulation becomes more complete, the more plastic products of inflammation are formed, the yellow color fades, the bright zone of enlarged vessels slowly disappears, and at length a cicatrix is formed. The paper concluded with a review of the arguments for and against the theory which supposes the fibrinous obstructions to have been washed away from the cavities of the left side of the heart. The author believes that obstructions may be formed in the arteries, or that they may be washed away from the heart; and after describing the mode in which obstructions formed in these two modes are to be distinguished from each other, he proceeded to give the reasons for affirming that in all the cases mentioned in this paper the plugs had come from the heart, from the arteries, or from an inflamed lung. The chief arguments made use of for arriving at this conclusion were: the peculiar appearance and structure of the plugs; their analagous structure to warty growths on the valves of the heart; the situation at which plugs are usually met with; the condition of the artery at the obstructed part; the occurrence of several plugs in neighboring or distant vessels; the very frequent, or indeed almost constant association with fibrinous deposits in the spleen and kidney; and lastly, the arguments which are derived from a consideration of the symptoms of this form of brain disease.

M. Trousseau's Fee.—This physician was lately summoned to Naples, and agreed to go and see the patient for a fee of \$8,000. When M. Trousseau reached Naples, the patient was dead. The money was paid.

Subcutaneous Injection of Morphia after Operation, before Restoration of Consciousness.—Mr. Paget removed the left leg of a woman at its upper fourth by means of the circular operation, whilst the patient was under the influence of chloroform. The woman was the subject of paralytic varus, which had been submitted to a former operation, with the result of the restoration of the foot to its natural shape. It was, however, a useless limb, was the subject of ulceration and chilblains, and for the purposes of progression was of no value whatever. It caused her a great deal of misery and trouble, and she was anxious to get rid of it. To this Mr. Paget consented; and after removal, the limb was found, as is usual in such cases, to have undergone fatty degeneration, and the bones were in the same state.

After the stump was dressed, a subcutaneous injection of a solu-

tion of a third of a grain of morphia was practised, with the view of inducing freedom from pain, and some refreshing sleep after a return to consciousness. The practice, as Mr. Paget remarked, has been in use for some time at the Middlesex Hospital, and has afforded much comfort and ease, especially after many of the more important and painful operations. From a quarter to a third of a grain, or, if necessary, even half a grain, of the morphia may be employed, according to circumstances.

Opening in Septum Ventriculorum.—Mr. James Stedman, in a case of cyanosis in a child two years old, found, at the autopsy, warty vegetations on the semilunar valves at the base of the pulmonary artery, the orifice of that vessel being very much contracted; though patent to a certain extent. The septum ventriculorum, at its upper part or base, was deficient to about a fifth of its depth, this free border or base being concave in its long diameter, and rounded and smooth in a transverse direction—that is, passing from ventricle to ventricle.

Black Cataract.—Another case of this rarity has turned up, or rather turned out, in the world. It was extracted by Mr. Hulme, who believed the color was due to imbibition of the coloring matter of the blood. It had been said that these lenses contained iron.

Small Pox and Manslaughter.—In a recent report by Dr. [illegible] on the health of the parish of St. James, that physician alludes to the prevalence of small-pox in his district. The extent of this fatal and loathsome disease prevails is, indeed, disgraceful to our civilization. By the neglect of vaccination this malady is perpetuated amongst our population: and in England, the birth-place of Jenner, more deaths annually occur from this cause than are recorded in twenty years in countries, such as Denmark, where vaccination is strictly enforced.

Dr. Lankester made one striking and important observation on this form of preventable malady. He remarked that it was a maxim of the law, that when any person, by the commission of any illegal act, or the omission of one legally incumbent upon him, was instrumental in another's death, he was liable to be charged with and punished for manslaughter. Now, vaccination is, by law, compulsory; and when, through neglect of a parent to take this precaution, a child is attacked with small-pox, it would seem to be no strained deduction to assert that such a parent is legally and morally guilty of manslaughter, and should, on public grounds, be punished for the offence.—*Lancet*.

Hospital Changes in Paris.—Hospital physicians must, in Paris, retire at 65, and surgeons at 60. This regulation gives rise pretty often to promotion among the staff of hospitals. The latter is elected by competition, the successful candidates forming, at the central nosocomial office, a nucleus of officers ready to act as substitutes, or take vacant places. They are besides busily engaged, several hours a day, in admitting for the different hospitals, patients who apply, as they are expected to do, at the central office. The latest changes have been caused by the resignation of M. Malgaigne, at the Charité, and the retirement, in virtue of the above-mentioned regulation, of M. Gibert, at St. Louis. M. Malgaigne's resignation has taken every one by surprise, and is universally regretted.

Iodide of Ammonium in Scrofulous Glands.—The iodide of ammonium is highly recommended by English authorities, for scrofulous enlargements of the absorbent glands. Dr. Price speaks of it as having succeeded in his hands when other remedies prominent in hygiene and medicine had failed. The dose internally is from one to six grains repeated three daily before meals. The quantity

used ^{externally} is one drachm to an ounce of lard or glycerine to be rubbed, night and morning, over the swelling. Dr. Price considers it one of the best compounds of iodine, and says there are two circumstances especially to recommend it: the stomach is seldom affected by its continued use, and its external application does not stain the skin.

Arsenious Acid in Large Doses in Fever—A Substitute for Quinine. By J. TURNER, Surgeon Bombay Artillery.—The author has employed arsenious acid for twenty years in the treatment of intermittent fevers, and on account of the great drain upon the cinchona tree, its failure in India, and his strong opinion as to the equal if not greater value of arsenious acid in the above-named diseases, he now brings the results of his experience before the profession. He considers the fears of an inconvenience or danger arising from the remedy as much exaggerated, and instances the case of a child of nine months, to whom he gave twenty minims of the arsenite of potash within ten hours, repeating the dose on the following day, with the only effect of curing an obstinate quotidian intermittent, Mr. Turner's success was so marked, that the Director General stated that Mr. Turner should be thanked for "drawing attention to his successful treatment of intermittent fevers by large doses of arsenic, and steps should be taken by circular to urge an extended trial of this remedy, and reports requested." The course usually adopted by the author was to give the arsenite of potash as in the following prescription: Arsenite of potash and compound tincture of camomom, of each half a drachm; gum mucilage, three drachms; pour mixture or water, half an ounce; mix. To be given every second hour four or five times, the last to anticipate the expected paroxysm at least two hours.

Arsenic Smoking in Asthma.—This is a practice of the Chinese. A French lady troubled with this affection, commenced by smoking a quarter of a grain three or four times daily in a cigarette, and this she continued to do for about fourteen days, with the greatest benefit to her breathing and general health. She has subsequently much increased the dose, and when she feels an attack of asthma coming on, she does not weigh the arsenic, but takes up what she considers a sufficient dose on a paper knife. On weighing one of these doses I found it to be a little over three grains, and analysis proved it to be pure arsenious acid. She does not inhale the fumes and blow them out as in ordinary smoking, but when her mouth is full she swallows the smoke. The only ill effects she has ever experienced is swelling of the eyelids, and, at first, slight pricking pains about the stomach, but never to any troublesome extent. Any expected attack, now at long intervals, is cut short by a resort to the remedy.

Treatment of Diabetes.—M. Dèmeaux, whose name is already well known to the profession in connection with the introduction of coal-tar into therapeutics, read a memoir before the Academy of Sciences, at a late sitting, upon a method of treating diabetes, from which he has derived most encouraging results. "I have been," says this practitioner in his communication, "for several years past in the habit of using, in cases of diabetes mellitus, a mixture of extract of rhatany and calcined alum in equal parts, and have been so far successful as to think it incumbent upon me to call the notice of the profession to the effects I have witnessed. In all cases I have obtained a decided modification and amelioration of the symptoms, and in two instances in which the disease was well marked, a continuance of the above treatment brought about an entire cure." Two cases, it is true, are not conclusive; but as M. Dèmeaux has pledged himself to a more complete examination of the subject, the negative or positive solution of the question will be shortly forthcoming.

ARMY MEDICAL INTELLIGENCE—OFFICIAL

SURGEON-GENERAL AND MEDICAL OFFICERS ON DUTY IN HIS OFFICE.

S. P. Moore.....Surgeon-General C. S. Army.
 C. H. Smith.....Surgeon C. S. Army.
 Thos. H. Williams....." " "
 F. Sorrel....." " "
 Chas. Brewer....." P. A. C. S.
 Herman Baer....." " "

MEDICAL DIRECTORS IN THE FIELD.

Surgeon L. Guild.....Army Northern Virginia.
 " H. McGuire.....Ewell's Corps. Army Northern Va.
 " J. S. D. Cullen.....Longstreet's Corps, "
 " J. W. Powell.....Hill's " "
 " J. B. Fontaine.....Cavalry " "
 " John A. Hunter.....Breckinridge's Command.
 " R. L. Brodie.....Beauregard's "
 " T. L. Ozier, temp.....Charleston, S. C.
 " A. J. Foard.....Army of Tennessee.
 " J. H. Erskine.....Hindman's Corps, Army of Tennessee.
 " A. L. Breysacker.....Hardee's " "
 " P. B. Scott.....Meridian, Miss.
 " F. A. Stanford.....Wheeler's Cavalry Corps.
 " J. F. Heustis.....Mobile, Ala.
 " John M. Haden.....Marshall, Texas.
 " J. H. Berrien.....Houston, "
 " J. T. Darby.....Stewart's Corps (Late Polk's)
 " Will. Jennings.....Morgan's Command.

OF HOSPITALS.

Surgeon W. A. Carrington...Richmond, Va.
 " F. A. Ramsey.....Bristol, Tenn.
 " P. E. Hines.....Raleigh, N. C.
 " N. S. Crowell.....Charleston, S. C.
 " S. H. Stout.....Macon, Ga.
 " S. A. Smith.....Alexandria, La.
 " J. F. Heustis.....Mobile, Ala.
 " P. B. Scott.....Meridian, Miss.

MEDICAL INSPECTORS IN THE FIELD.

Surgeon W. D. Tucker.....Department of Ala., Miss. and La.
 " Samuel Choppin....." N. C. and South. Va.
 " R. J. Breckinridge....." Army Northern Va.
 " J. W. Breedlove.....Western Virginia.
 " E. N. Covey.....Va., Tenn. and Ga., and Superintend't
 of Vaccination of Armies in these
 States.
 " W. W. Anderson.....N. C., S. C., Ala., Fla., La. and Miss.,
 and Superintendent of Vaccination
 of Armies in these States.

OF HOSPITALS.

Surgeon T. C. Madison.....Petersburg, Va.
 " F. Sorrel.....Richmond, "
 " E. S. Gaillard.....Box 1150 Richmond, Va.
 " R. A. Kinloch.....Charleston, S. C.
 " W. M. Brown.....Morton, Miss.
 " E. A. Flewellen.....Army of Tennessee.
 " J. H. Morton.....Abingdon, Va.

ARMY MEDICAL BOARDS.

Surgeon A. N. Talley.....President of Board...Richmond, Va.
 " E. Giddings....." " ...Charleston, S. C.
 " W. M. Brown....." " ...Gen. Hood's Head-
 quarters.
 " J. J. Gaenslen... " " ...Gen. E. K. Smith's
 Headquarters
 " Hooper....." " ...Trans-Miss. Depart-
 ment.

PRINCIPAL HOSPITALS IN THE CONFEDERATE STATES.

VIRGINIA.

Hospital.	Location.	Medical Officer.
Chimborazo	Richmond.....	Surg. J. B. McCaw.
Camp Jackson.....	"	F. W. Hancock.
" Winder.....	"	A. G. Lane.
" Lee.....	"	W. P. Palmer.
Howard's Grove.....	"	T. M. Palmer.
Stuart.....	"	R. A. Lewis.
Louisiana	"	W. C. Nichol.
General, No. 9.....	"	J. J. Gravatt.
" " 13.....	"	H. T. Barton.
" " 21.....	"	G. W. Semple.
" " 24.....	"	O. F. Manson.
"	Liberty.....	B. Blackford.
"	Huguenot Springs...	W. T. Walker.
"	Gordonsville.....	B. M. Leebby.
" No. 1.....	Lynchburg.....	G. W. Thornhill.
" " 2.....	"	W. C. N. Randolph.
" " 3.....	"	T. H. Fisher.
Ladies' Relief.....	"	W. C. Warren.
Pratt.....	"	J. H. Murray.
Way.....	"	A. C. Smith.
General.....	Farmville.....	H. D. Taliaferro.
"	Danville.....	J. F. Fauntleroy.
"	Staunton.....	A. M. Fauntleroy.
Confederate States.....	Petersburg.....	
Carolina.....	"	F. Peyre Porcher.
"	"	R. P. Page.
"	"	M. P. Scott.
"	"	C. F. Cench, A. A. Surg.
Carolina.....	"	Surg. J. G. Brodnax.
"	"	J. H. Pottenger.
General.....	Pearisburg	T. Creigh.
"	Charlottesville.....	J. L. Cabell.
"	Montgomery Sp'gs...	J. L. Woodville.
"	Emory	J. B. Murfree.
"	Harrisonburg.....	A. R. Meem.
Washington	Abingdon	H. A. Blair.
Wayside.....	Burkesville.....	Dr. T. R. Blandy.
Breckinridge.....	Marion.....	Surg. R. D. Hamilton.

NORTH CAROLINA.

Way, No. 5.....	Wilmington.....	Surg. J. C. Walker.
General, No. 4.....	"	T. R. Micks.
" " 5.....	"	H. J. Macon.
Way, No. 7.....	Tarboro'	Dr. J. H. Baker.
" " 1.....	Weldon	Surg. H. H. Hunter.
" " 6.....	Charlotte.....	J. W. Ashby.
General, No. 11.....	"	" " "
Gen. Military No. 2.....	Wilson.....	S. S. Satchwell.
Way	Goldsboro'	Dr. L. A. Stith.
General, No. 3.....	"	W. A. Holt.
" " 7.....	Raleigh	Surg. E. B. Haywood.
" " 8.....	"	H. G. Leigh.
Pettigrew.....	"	E. B. Haywood.
Sorrel.....	Ashville	W. L. Hilliard.
General, No. 9.....	Salisbury.....	As. Sur. J. M. Fauntleroy.
" " 10.....	"	Surg. J. W. Hall.
Way, No. 3	"	J. W. Hall.
General, No. 6.....	Fayetteville.....	B. F. Fessenden.
General, No. 1.....	Kettrell Springs.....	H. F. Butt.
" " 12.....	Greensboro'	W. H. Moore.
Way, No. 2.....	"	E. B. Holland.

[TO BE CONTINUED.]

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CONFEDERATE STATES MEDICAL & SURGICAL JOURNAL.

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RICHMOND, OCTOBER, 1864.

No. 10.

ORIGINAL COMMUNICATIONS.

ART. I.—*Gun-Shot Wounds—Army of Northern Virginia.*

[An extract from a Report on the Sickness and Mortality in the Armies of the Confederate States for 1863.] By F. SORREL, Surgeon and Inspector of Hospitals.

GUN-SHOT WOUNDS.

The proportion of these was less than that of last year by 2 per cent.; that is to say, while gun-shot injuries, during the period covered by the report of last year, amounted to 9.8 of the whole number of cases reported; for 1863, they only reach 7.7. It will be remembered that the campaign of 1862 was conducted with the utmost vigor, and that the army fought, in quick succession, many sanguinary battles, commencing with that of Williamsburg and ending with that of Fredericksburg; including between these two the battles around Richmond, Cedar Mountain, Manassas and Sharpsburg, each of which resulted in a heavy list of casualties to the troops engaged.

The mortality from these causes, as might be expected, was not nearly so great during this year as it had been during the one previous. The men had become hardened and better able to resist the influence of climate and exposure, and the battles, which occurred during the year, transpired at a season far more favorable to recoveries. Thus, instead of being crowded together in hastily extemporized hospitals during the intense heats of mid-summer, as they were in 1862, the battle of Chancellorsville, fought early in May, gave to its wounded the benefit of a most delightful and salubrious season for treatment and recovery, while that of Gettysburg, still later, sent only to our hospitals the more slightly wounded, leaving the grave cases in the hands of the enemy to die, or to be otherwise accounted for in a manner not known to our reports.

The surgical operations performed on the field at Chancellorsville did remarkably well. Generally, the wounded reached the hospitals in this city in a condition favorable to recovery, and as before stated, the excellent condition of our hospitals seemed to repress all tendency to the prevalence of erysipelas or gangrene. Indeed, never before or since have they been so entirely free from the presence of these diseases, as they were during the summer and fall of this year.

In the hospitals, the mortality from wounds, during the year 1862, amounted to 11.2; in 1863, to 2.3; and this difference is really increased still further in favor of the latter year, by the fact, that the wounded from the battle of Fredericksburg gave most of its mortality to the year 1863, without adding at all to the number of cases for that year—these having been already embraced in reports for 1862.

The figures, as we have them in our reports for this year, exhibit 42,885 cases of wounds treated in hospitals, and 999 deaths—this yields a mortality of 2.3. But, in order to arrive at a more accurate estimate of the proportion really dying from wounds in hospital, it will be well to assume that the number reported from the field were all that were treated in hospitals; and this being 27,206, and the mortality 999, we have a percentage of 3.7, which, it is believed, approaches nearer the truth.

Adding the number dying in hospitals to those reported from the field, we have an aggregate of deaths for the year in field and in hospital, from gun-shot wounds, of 1,723, or 2.4 of the whole number of cases reported.

This, however, is much too small, because it is impossible, as before stated, with our present form of reports, to avoid the frequent multiplication of cases by transfer, &c.

During this year, one case of successful amputation at the hip-joint was reported. It occurred in the person of James Kelly, private company "B," 56th Pennsylvania, aged 23, and by occupation a farmer. He was wounded April 29th, 1863, near Fredericksburg, sustaining compound comminuted fracture of the femur. Disarticulation, by antero-posterior flaps, was performed the same day on the field. He fully recovered, was paroled and sent North July, 14th, 1863. (Operation performed by Surgeon E. Shippen, U. S. A.)

It is proper to remark, also, in this connection, the many successful cases of *amputation*, especially of the upper-third of the thigh, occurring in our reports. Among them may be mentioned Lieutenant-Generals Ewell and Hood, (the latter now General Commanding Army of Tennessee,) both of whom have been restored to duty, in the full vigor of health, with thighs amputated just a little short of the hip-joint. Added to these are many others, of less distinction, it is true, but not the less attesting the skill and ability of Confederate Surgeons in the performance of an operation, regarded heretofore as almost uniformly fatal. Indeed, so much had this come to be regarded the case, that recently an order emanating from the

Federal Surgeon-General forbids such operations on the field, not only at the upper-third, but anywhere along the continuity of the thigh.

This question of Conservative Surgery in compound fractures of the femur, is one which is receiving the most earnest attention of military surgeons, and though it has been, to some extent, decided in the United States, we are obliged, in balancing the merits of the two methods of treatment, to adopt a different opinion. With us the results, as elicited from our reports, exhibit a slight percentage in favor of the operation itself on the field. Thus, of 77 cases of primary amputation of the thigh, at the upper-third, 40 recovered, and 37 died. The same favorable results are also found to have attended the conservative method of treatment in similar cases: for, of 221 cases, where amputation was not resorted to, 116 recovered.

These results are indeed remarkably favorable; far surpassing, in this way, any heretofore reported or known to the profession.

As between the two modes of treatment, the difference in the results is but slight, as shown by the figures given above, and as will be more perfectly understood when the tables annexed shall be examined. Guided, then, by our reports, it may be safely accepted as a rule, that the better plan, in general, is to operate on the field. The greater readiness with which the patient can be transported from the field; the greater ease and comfort realized under these circumstances, when the limb has been removed; the lesser time required in hospital for recovery, would all seem to point to its adoption as the wiser policy. Still, in these and in all other questions of surgical interference, the medical officer should be governed by the peculiar circumstances attending each case.

Many *resections* were performed during this year; and while in very many instances with results altogether favorable, so far as recovery alone is considered, yet, we are inclined to think, in nearly all cases, leaving limbs of very doubtful utility. Indeed, when it is considered that these operations are much more fatal than simple amputations, exposing the patient for a much greater time to the evil influence of hospital atmosphere; involving more frequently, too, attacks of erysipelas, gangrene, and pyæmia, it may be well questioned if our surgeons do not too often resort to them.

The shoulder-joint, we sometimes think, is the only one in which resection promises all the good results claimed for it. In the elbow, if the entire joint be removed, no possible effort of nature can supply the lost motion; and the slight prehensile power of the fingers, which may continue, can scarcely atone for the awkward, useless and ungainly limb remaining.

Exsection of the knee joint we cannot help regarding as positively reprehensible on the field, and scarcely less so in hospital. But one successful case is reported during the year, (Surgeon J. B. Read;) at last accounts, (September, 1864,) the patient was fully recovered, but with a limb shortened by several inches, and union only ligamentous. Amputation has been asked for by him, and will be performed as soon as the condition of his health may justify it.

One successful case of resection of hip-joint has likewise

been reported by Surgeon J. B. Read, and though the leg will never be of any use, yet it is fair to say, that to this operation may be due the preservation of the patient's life, which might have been more seriously imperilled by disarticulation.

Frequent cases of gun-shot wounds, healing by first intention, have also been reported. It is difficult to understand how this can be so, when all our theories of repair and restoration of lost tissues have been based on inflammatory action, leading, of course, to suppuration and granulation. Still, the evident care and truthfulness which accompany the report of the cases attest the fact beyond all doubt; and it is hoped that future investigations on the part of the Medical Staff will, in time, yield much that is interesting and instructive in this connection. Already, it has been proposed (by Surgeon J. J. Chisolm) to convert all gun-shot wounds into simple incised wounds, by paring the ragged edges, and nicely adjusting the lips by means of sutures or straps, excluding the atmosphere, and thus effecting a cure by absorption and re-modelling, without the aid of suppuration.

TETANUS.

In reviewing carefully all the circumstances connected with gun-shot wounds, as exhibited in the reports before us, it would be singular did we not remark the occasional occurrence of tetanus.

This complication of gun-shot wounds, so obscure, so fearfully fatal, and so much to be deplored, is fortunately seldom met with. Indeed, it has always been a source of wonder to all writers on military surgery that it so rarely occurs. In our reports for 1861, we find that in 1,750 cases of wounds of different characters, there were thirteen cases of tetanus—0.75, or one case of tetanus in 134 cases of wounds. Of these only three are reported as having ended fatally, giving a ratio of mortality of 2.3, or one death in four cases: a result which clearly proves the inaccuracy of our earlier reports.

In 1862, the consolidated reports from hospitals present 45,974 cases of wounds, and only 53 cases of tetanus—0.11, or one case of tetanus in 867 cases of wounds. Of these 53 cases, 28 terminated in death—52.8, about one death in two cases, a much larger percentage of mortality than in 1861—but still, we have reason to suspect, very much below the truth. Many of the cases reported tetanus are, doubtless, more cases of traumatic spasms, hence such apparently favorable results.

Tetanus was doubtless of more frequent occurrence in our hospitals than would appear from the reports, as it is well known that cases are generally reported under the disease they first enter with, which ordinarily is "*Vulnus Sclopeticum*." It is only recently that surgeons have been reporting "*supervening diseases*." In referring to our special reports of gun-shot injuries involving tetanus, covering the whole period of the war up to the present time, and which are evidently drawn up with great care, we find 66 cases recorded. Of these, six only recovered, giving a mortality of nearly 91 per cent.

Assuming, then, that these constitute the entire number of cases of decided tetanus which have occurred on the whole

number of gun-shot wounds treated, (56,775,) we have the proportion of 1 case of tetanus to every 869 cases of gun-shot wound.

McLeod, in his Surgery of the Crimean War, does not give the proportion of tetanus to wounds, but he says he could only hear of thirteen cases of tetanus in the English army throughout the Crimean war. These were all fatal—with only one exception. In the last East India war, nineteen cases are reported, and only one recovery. Alcock gives the proportion of cases of tetanus to wounds as one in seventy-nine. Stromeyer states, that during the Schleswig-Holstein war, the proportion was 3 in 1,000. In 1830, of 390 cases of gun-shot wound, there was only one case of tetanus in the *Hôtel Dieu* at Paris.

The following tables which exhibit the general results of amputations and resections thus far collected, and carefully prepared from reports throughout the Confederacy:

RESECTIONS.

	Shoul'r.	Elbow.	Wrist.	Hip.	Knee.	Total.
Primary—						
Successful.....	28	22	2	...	...	52
Unsuccessful.....	13	3	...	...	2	18
Secondary—						
Successful.....	20	23	1	1	1	46
Unsuccessful.....	7	6	...	1	1	15
Useful Joints.....	2	7	...	...	...	9
Total.....	70	61	3	2	4	140

DISARTICULATIONS.

	Shoul'r.	Elbow.	Wrist.	Hip.	Knee.	Total.
Primary—						
Cases.....	54	3	5	1	2	65
Deaths.....	25	1	2	2	3	33
Secondary—						
Cases.....	9	2	...	...	...	11
Deaths.....	20	1	...	...	6	27
Total.....	108	7	7	3	11	136

AMPUTATION OF THIGH.

	UPPER THIRD.		MIDDLE THIRD.		LOWER THIRD.		TOTAL.
	Cures.	Deaths.	Cures.	Deaths.	Cures.	Deaths.	
Circular—							
Primary.....	19	11	33	14	42	27	146
Secondary.....	3	7	7	14	12	21	64
Flap—							
Primary.....	6	4	15	10	35	11	81
Secondary.....	3	1	3	9	5	5	26
Method not stated—							
Primary.....	15	22	24	21	35	27	144
Secondary.....	4	16	5	19	14	35	93
Total.....	50	61	87	87	143	126	554

COMPOUND FRACTURE OF THE THIGH TREATED WITHOUT AMPUTATION.

	Recoveries.	Deaths.	Days.	Inches.
Average Period of Recovery.....	116	105	....	....
Greatest Period of Recovery.....	104	....
Least Period of Recovery.....	255	....
Average Period of Death.....	41	....
Greatest Period of Death.....	52	....
Least Period of Death.....	185	....
Average Amount of Shortening.....	1	....
Greatest Amount of Shortening.....	1.9
Least Amount of Shortening.....	5.0
				0.5

CONSOLIDATED TABLE OF AMPUTATIONS.

	PRIMARY.				SECONDARY.			
	Cases.	Cures.	Deaths.	Per cent.	Cases.	Cures.	Deaths.	Per cent.
Thigh.....	345	213	132	38	162	43	119	73
Leg.....	314	219	95	30	150	76	74	49
Arm.....	294	252	42	14	140	87	53	37
Fore-Arm.....	69	61	8	12	45	35	10	22
Shoulder-Joint.....	79	54	25	31	28	8	20	71
Elbow-Joint.....	4	3	1	25	3	2	1	...
Wrist-Joint.....	7	5	2	28	...	...	...	...
Hip Joint.....	3	1	2	66	...	...	...	...
Knee-Joint.....	5	2	3	60	6	...	6	100
Ankle-Joint.....	6	4	2	33	4	4	...	...
Tarsal-Joint.....	16	13	3	19	8	7	1	12
Total.....	1142	827	315	27	546	262	284	51

ART. II.—Two Cases of Gun-Shot Wounds, Fracture and Depression of Skull, Resulting in Epilepsy; Trepanning; and some Remarks on the Nature and Flight of Balls, Spherical and Conical: By B. RÖMER, Surgeon P. A. C. S.

1.—H. Vandueson, private Company "C," 4th Regiment Texas Volunteers, was admitted into hospital on March 28, 1864, and appears upon the hospital register diagnosed "Epilepsia consequent upon V. S." His history is as follows: Was wounded on July 3, 1863, the ball traversing and ploughing up that portion of the right parietal bone lying in the angle formed by the coronal and sagittal sutures, antero-superior aspect; cicatrix formed regularly, and he returned to his command, although he had periodic epileptic fits since September, 1863, which, becoming gradually more intense and of greater frequency, caused his return to hospital in March, 1864, since which time he has been under my charge. The cicatrix was 4½ inches in length, pointing obliquely backwards under an angle of 60° with the coronal suture, deepening and widening in its centre, and presenting a depression of

look Rice

$\frac{3}{8}$ inch in depth; the scalp here is radiated, as if the covering had assumed the abnormal condition of the bone beneath. Since his admission the epileptic paroxysms became violent and of greater frequency, from three to four times every month, each composed of a number of successive convulsions. His applications for furlough could not be entertained, because of the possible relief offered by an operation (and in accordance with orders from the Surgeon General S. P. Moore) and on July 18th he was subjected to the trepan. His general condition previous to an attack was marked by dejection of spirits, vertigo and apathy; his bowels habitually costive; appetite wanting; urine scanty; pulse feeble and 60 to the minute; and face pale. Extravasations were supposed to exist, and the trepan was applied with a view to control, if necessary, by a second removal, the whole depressed bone. The bowels having been opened, chloroform was administered, and two incisions were made in form of a T, laying one nearly parallel with the coronal suture upon the upper margin of the parietal bone, about $\frac{1}{2}$ inch from the cicatrix, and uniting with it (at $\frac{1}{3}$ its length) the second incision, which extended over the upper third of the cicatrix and behind it. The first measured $3\frac{1}{2}$ and the second 4 inches. On dissecting the two flaps back, which over the cicatrix adhered firmly to the skull, the bone verified its radiated depression. The place of election for trepanning lay at the upper part of the depression, so as to allow the circumference of the trepan to enclose a portion of the fracture. The outer table being very thin, it was easily passed through, the thickness of the inner table, however, demanded a careful progress of the trepan. The bone came away with the trepan, and no adhesions of the dura mater existed. Immediately below and almost in the centre of the opening lay a violet-colored, circular and somewhat convex extravasation, covered by the dura mater, which was divided by a simple cut. (Following the advice of J. Hunter, Lectures, Palmer's edition, vol. 1.) No hemorrhage existed from beneath the skull, and three small arteries of the scalp had been readily controlled without ligation. Careful examination of the inner table beneath the depression (which the convexity of the dura mater rendered difficult) revealed no irregularities. The extravasation being removed, the wound was closed with adhesive straps, cold water dressing applied and a cross bandage. The patient recovered well from the effects of chloroform, and walked about in his quarters on the second day. The wound healed by first intention. He expressed himself two weeks after the operation as free from any unpleasant feelings, such as he experienced since the wound had been received. The condition of his bowels became healthy, his general aspect cheerful, and I have every reason to anticipate a removal of the cause for which the operation was undertaken. The results of this operation, in declining a further trepanning of adjacent parts after removing a portion of skull around, and partly including the fracture of the outer table, rest upon the disclosure of the extravasation, and the cranial opening into which, like as into a safety-valve, the brain and envelopes could protrude, to the annihilation of any pressure upon itself. The loss of a portion of the outer plane and diploe *with* depression of sur-

rounding parts and *without* fracture of the internal table, while it is not of unusual occurrence, is yet without anatomical analogy. The position of the wound, or, as I shall aim to show hereafter, the angle under which the line of flight intersected the axis of the parts struck, and the great velocity of the ball; the abnormal thinness of the outer table and the reverse of the inner plane, can alone explain such instances.

2.—The second case, a synopsis of which in relation to its previous history has been kindly furnished me by Dr. R. R. Ritchie, Acting Assistant Surgeon, presents the following characteristics, in giving which I quote from a letter from Dr. R.:

"E. Herring, private Co. "E," 38th Georgia Regiment Volunteers, was wounded at the battle of Sharpsburg on September 17, 1862, and entered this hospital May 18, 1864. According to his statement, he enjoyed perfect health up to the time of receiving his wound. He was struck by a Minie ball in the middle of the right parietal bone, carrying away a considerable portion of both tables of the skull, and from the great press of surgical work at the time, the wound was rather hurriedly dressed on the field, after which he was sent to hospital, where his wound soon closed without having undergone any further examination for spicula or any depressed portions of bone. Soon after the wound had healed he was attacked with epileptic fits, which have continued at uncertain intervals ever since. Upon examination of the cicatrix, a very marked depression was found, and an elastic-yielding sense of touch beneath it. The epilepsy continuing, and the attacks being more frequent, on consultation, an operation (at least exploratory) was decided upon for his relief." In the presence of Surgeons Pride, Roemer and others, Dr. Ritchie proceeded to place the patient under chloroform, and operated with the trepan, assisted by the above-named surgeons. The incision was in form of a T, the first lying parallel with the sagittal suture, and the second striking it at about its upper third, over the cicatrix and above the point of fluctuation spoken of. The scalp was found adhering to the skull, and abnormal in structure and thickness. The opening through the inner and outer plane was covered with a firm cartilaginous layer, on removing which, considerable hemorrhage from within took place, which was, however, promptly controlled by the application of a heated needle to the orifice of the vessel (no doubt the middle meningeal art.). The trepan was first applied above this opening and somewhat towards the sagittal and coronal angle, after the removal of which portion of the skull, it being evident that the depression extended further, and the loss of substance (outer table) around the now open skull near the point of fluctuation, precluding the idea of elevating the depressed bone, the trepan was again applied posteriorly and somewhat beneath the first place, at about one inch distance, and the bone having been removed, the edges of the skull between the first and second opening and between either and the point, where both tables had been destroyed by the missile, were taken away by means of Hey's saw; it left thus a truncated triangular opening of about $\frac{1}{2}$ square inch area. Immediately beneath this last locality was dis-

closed a decided convexity and fluctuation, combined with the peculiar violet discoloration of the dura mater, and upon heavy inspiration a yellowish, serous liquid was seen jetting from a small puncture, which may have been inadvertently made during dissection. This membrane was next carefully divided, and about four ounces of the same liquid discharged. All pressure being removed and the flow of blood arrested, the wound was closed. Adhesive straps alone were found insufficient to bring the edges to adaptation, as the loss of bone and the evacuation of fluid caused the same to collapse, and it became necessary to make use of interrupted sutures. Cold water dressing constituted the treatment, and the patient recovered well from the effects of chloroform. He did unusually well until the morning of the fifth day, when information was brought before daybreak that he had another convulsion. On inspecting the bandages and dressings, they were found bloody and in considerable disorder, and no doubt was entertained that during sleep he had suddenly turned himself on the wounded side, which, if true, would clearly account for this unpleasant feature in the case. Since this accident (as it is esteemed) the patient has been closely watched night and day, and nothing untoward has since occurred. The wound has nearly healed by first intention, and nothing but an accident can now prevent his complete restoration in a few weeks' time.

In this second case the position of the head to that of the direction of the enemy's fire must have been at least under an angle of 65 or 70 degrees, which accords with the statement of Private Herring.

Remarks.—The peculiar course of spherical and elongated balls has been often the subject of speculation, and it is presumed that their many apparent irregularities deny explanations of uniform application. Whilst some have laid too much weight upon relative velocities, others again have sought to solve the problem through the shape and mechanical bearing of the missile. The following constitute a few ideas on particular instances, selected to suit my purposes, and especially believed to apply to the cases of gun-shot wounds here presented; if necessary, I shall cite other instances treated by myself, and of which I have made careful notes during the time they were under my charge.

The elongated, Minie and Belgian ball, forming as it does a cone of nearly double its height to its base, admits not only of an action like that of a wedge, but also that of a lever, the former directly equal to the products between its weight and momentum of flight, and the latter equal to a quotient between the velocity of the ball and the resistance of the parts struck relative with its angle of penetration. I will premise that all illustrations shall have reference to wounds of the skull only. Let a ball, fired at a given distance, penetrate the thin coverings, the pointed end of the cone will, by its momentum, bury itself to a certain extent into the osseous substance which offers resistance, and if the line of flight be a continuation of the axis of the parts, must either penetrate or become imbedded. Should, however, the trajectory of the ball fail to conform to this direction, different results must

follow in a direct ratio with the greater or less deviation from that line.

While the flight of a spherical ball is a compound of a forward and a central rotatory motion, its arrest of progress, on striking, can be multiplied by different angles of deflection, not only because its centre of gravity and motive power are mathematically identical, but also because its rotation around its own axis (without deviation from the line of flight, except such as may be caused by the general laws of gravitation) makes it liable to a deflection in favor of its rotation around itself, if in the same direction and *vice versa*. In other words, the tangents of a spherical ball on striking and the axis of the parts in contact constitute the elements for the parallelogram of powers, through which the new line of flight by deflection is found in the diagonal; any other secondary motion, however, must to some extent annihilate its momentum by gravitation, if it be opposed to the primary direction, or increase the same if both directions mechanically coincide. Hence, should a spherical ball strike the left side of the abdominal walls from the right (or any part of the same in a direction from the right) in its forward flight, and the ball, on leaving the barrel, assume a rotation around its axis from right to left, it can easily be understood how its momentum in continuation of the line of flight should be so far reduced* by its secondary (or accidental) motion by the resistance offered, as not only to arrest its penetration, but to cause the ball to proceed, imbedded as it were in the coverings, around the cavity more or less, the rotation of the missile giving direction (assisted by integuments within and outwards) and the primary impulse giving the necessary force. This becomes a still clearer point, if we recollect that spherical balls, though of greater initiatory velocity than those conical, decrease rapidly in velocity, and that, consequently, their gravitation increases in the same ratio. The phenomena of an elongated ball in its passage after striking are greatly different.

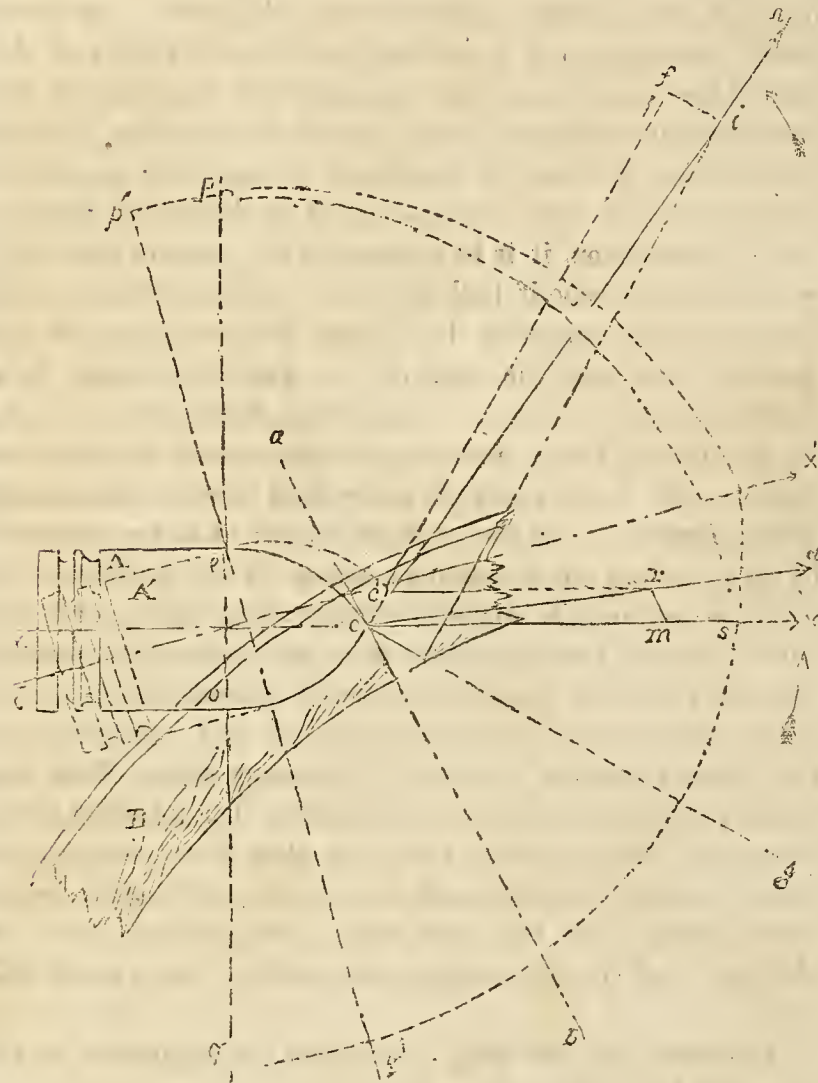
Assuming the following dimensions as applicable to all elongated balls, viz:

Height,	-	-	1.1-20 inch.
Diameter at base,	-	-	0.55 "
Height of cylinder,	-	-	0.40 "
Diameter of hollow cone at base,	-	-	0.36 "
Diameter of hollow cone at vertex,	-	-	0.12 "
Height of hollow cone,	-	-	0.40 "
Height of conical extremity of ball	-	-	-
above cylinder,	-	-	0.65 "
then is the cylinder proper (minus hollow cone),	-	-	0.0920
The cone itself,	-	-	0.1235
And the whole ball,	-	-	0.216

in point of metal, and the point of gravitation (p), lying in the axis $y x$ results $yp : xp :: 0.0920 : 0.1235$; its position, in other words, is in the axis nearer to the point of the cone than to its base. The motion of a conical ball, strictly

* Analogous to the peculiar rotation of the "mechanical paradox;" the Australian vomera also owes its peculiar flight to similar circumstances.

speaking, dips forward, whereby its gravitation would be materially increased did not its rotation in the *plane of flight** counteract the same. An increase of forward motion must also be expected from the vacuum around the ball during its flight, and the consequent collapse and forcible entrance of air into the hollow cone, a fact to which we will have occasion to refer hereafter. Hence, while the initial velocity of a conical ball is less than that of a spherical, yet its absolute speed is much greater.



EXPLANATION OF DIAGRAM.— xy , line of flight; A , first position of ball; B , portion of bone struck at angle of 22° ; ab , axis of bone at point of cone, c ; ec , oc , conical surface of ball, arc of 60° ; $mr = cm - 10$; ps , sq , arcs of 60° ; A' , second position of ball turned at angle of 15° ; $A'Y'$, second line of flight; c' , second position of point of cone after deflection; cf , its tangent at c for second position of ball; cg , direction of power of resistance; ch , new deflection; $fi = cf - 10$; pq , $p'q'$, bases of cones.

Let A , an elongated ball, strike the skull B under an angle of 22° , and supposing the conical surfaces ec and oc to form arcs of 60° ; let the velocity of the ball be sufficient to penetrate (e) a given depth of the bone, then ab , the axis of the bone at c , will resist the further progress of the cone, forming with xy , line of flight, the elements for the parallelogram of opposing powers; and if cm , or the momentum of the ball, be equal to $10 mr$, or ten times as great as the resistance of ab , a deflection of yx will take place in the direction of cd . Following its new flight for 15° , A' becomes the new position

of the ball with its axis of flight $x'y'$; the point of the cone c lying now at c' , turned one-fourth of its conical surface. The tangent cf measures the resisting force cg at c , this being the point of contact with the resisting body governing its direction, while the point c' demonstrates in its progress the momentum. Allowing again $cf = 10 fi$, we find ch the line of new deflection, by which the point c' becomes still more raised above the original axis xy , $p'q'$, the second base of the cone pq , again turned upon itself until it approximates a parallelism with xy . The line so described by c , the point of the cone, is an arc, having its most shallow points at entrance and exit and its deepest secant at the centre; the former depending on the amount of resistance offered, and the latter proportional to the momentum of the missile. The result, consequently is—

1. Either a constant deflection towards d and h , and a final departure from the part struck; or
2. An arrest of its flight within the parts in contact, should the velocity of the ball become expended.

Experience has proved the peculiar marks left by balls upon well-supported resistances. That of a cannon ball upon a firm meadow differs from that made in ploughed ground; and a musket ball striking soft or firm parts of the body *ceteris paribus*, creates a wound in conformity with them. In the case of Herring above spoken of, the Minie ball was found in the place deprived of both tables, its point of cone resting upon the brain, and its base nearly horizontal. It had been turned nearly 90° , after creating a wound there inches long in its normal, longitudinal flight (of which fact the wound itself is sufficient proof). Such an occurrence is only possible under conditions agreeing with an arrest of the flight of the ball within the parts struck, and the following coincidences which, if true, would explain many other abnormal positions of elongated balls. After having traversed the scalp, outer table of diploe, and finally the inner table of the skull, the momentum of the ball being exhausted, the hollow cone of the ball received yet the impetus of collapsing air, while, the point of the cone meeting resistance and forming a fulcrum, continued to impart motion to the cylindrical portion of the ball, until the base of the hollow cone became so far turned from the original line of flight as to render further motion by influx of air impossible. Remembering that the point of gravity, in an elongated ball, lies nearer to the vertex of the cone, and that, consequently, it intersects the line of flight above its axis, it follows that the circular opening to the hollow cone presents to the influx of air really an ellipsis, the short diameter of which is a perpendicular to the line of flight, and which becomes shorter as each additional force upon the hollow cone causes it to turn, until it, the ellipsis (and base of cone) assumes a linear aspect. It will be understood that this last condition can only exist, provided the ball has turned 90° , or in other words, stands perpendicular and with its point of cone downwards.

Such a condition will not only arise if the velocity of the ball has been exhausted, but also while the same is yet comparatively unimpaired. On May 31st, 1862, I received the

* Or its helicoid motion around the line of the trajectory.

following case (General Hospital at Richmond): Jul. Mills, Volunteer Aid to Gen. Anderson, was wounded, the Minie ball ranging from above and behind the left ear towards the temporal bone, passing through attollens auris, ploughing up the temporal portion of the great wing of the sphenoid bone, thereby lacerating the attrahens auris, and escaping near the foram. lacer. orbit. superius. The first entrance was near the squamous portion of the temporal bone. By this passage the occipit. artery was cut. About one-half inch beyond its first exit (foramen l. o. sup.) the ball entered again near the supra-orbit. foramen, passing upwards obliquely, and escaped finally about 1½ inches above the ossa nasi near the sinus of the frontal bone. The temporal artery was divided in this second passage. This wound resembled one of incision, and healed by first intention, as reported to Surgeon General S. P. Moore, September 21, 1863. The anatomy of the parts implies a final departure of the conical ball after its first exit, but a quasi directing vis a tergo determined the missile to another line of flight, under an angle not less than from 5 to 10 degrees, whereby the ball re-entered with a sufficient momentum to traverse the skull several inches. On principles as above spoken of, such an occurrence may be accounted for, which otherwise would remain an undissolved problem.

ART. III.—*Resection of Clavicle.* Reported by R. L. JOHNSON, Assistant Surgeon P. A. C. S.

Corporal Wm. H. Husky, Co. "I," 3d S. C. Regiment; wounded on the 18th November 1863; left hand amputated about an inch above the wrist November 19th; one-half of right clavicle resected December 27th, 1863.

History.—While in the act of shooting, a ball (Enfield) struck his left hand, injuring it so severely that it was amputated on the 19th; and, after passing through many folds of blanket, struck the right clavicle about two inches from the sternal articulation, fracturing and comminuting the bone for the space of about two inches, and splitting the sternal end to within half an inch of the articulation. It then passed, as I afterwards learned from a post mortem examination through the upper part of the humerus, entering at and breaking the inferior edges of the cartilaginous surface of the head of the bone, and coming out near the upper part of the attachment of the teres major and latissimus dorsi.

The case came under my charge on the 4th of December, at which time nothing was known of the position of the ball. The surgeon who first examined the case was necessarily ignorant of the fact that the humerus was injured, for it was not broken in two but shot through, which caused, however, some splintering. December 5th.—Wrist (stump) doing well; right arm very much swollen, probably on account of an abscess in the anterior part of the shoulder, which presses on the veins. December 16.—Ligatures came away from the stump. December 19th.—Ordered whiskey, eggs, milk and other nourishing diet, which have just been obtained for the first time. December 24th.—The discharge of pus is now

from one to two gills per day. It escapes by overflowing of the wound at the clavicle, the quantity being much augmented by pressure on the anterior part of the shoulder, over the abscess. December 25th.—Dr. Spinks, of Humphrey's brigade, and Dr. North, of Anderson's, were consulted to-day, and it was agreed, 1st. To put the patient under the influence of chloroform, in order to make a thorough examination. 2d. To remove the ball if its position could be ascertained. 3d. If the shoulder-joint has not been injured, or any other serious injury been done by the ball in its progress, to remove all necrosed portions of the clavicle. December 26th.—Through the kindness of one of the Federal surgeons at Knoxville, I procured a good and complete set of resecting instruments. December 27th.—The following operation was made to-day, Assistant-Surgeons Spinks, Pygott and Cotton and Dr. Allen being present: The patient having been anaesthetized, was placed upon the table, and a large gum catheter was introduced into the wound and passed outwards along the sinus to the anterior part of the shoulder, where there was a collection of pus, and where the ball was supposed to be. Nothing more was gained by this step than a knowledge of the exact position of the abscess.

The arm was then moved about to ascertain whether or not the humerus was fractured; and as there was no crepitus, no displacement and no impairment of the movements of the joint, it was decided that the humerus and shoulder-joint were intact. An incision about two inches long was then made at the anterior edge of the deltoid muscle, and parallel with it, reaching from opposite the head of the humerus to below the neck. After cutting nearly an inch deep through the swollen tissues, the knife entered the abscess. The finger was then introduced, and a large abscess was found with one sinus leading to the wound at the clavicle, and one leading around under the skin and fascia to another abscess which lay in the posterior part of the shoulder. The first or anterior abscess contained pus and a few small spiculæ of bone. The second or posterior contained dark, filthy pus and the ball which was extracted.

The clavicle was then resected.

The existing orifice was enlarged by incisions—one extending nearly to the articulation of the left clavicle and sternum, the other extending over the distal fragment for about two inches. The sternal end was then disarticulated and removed by dissection. All spiculæ were then carefully removed from the wound. These spiculæ were generally furnished on one surface with periosteum, by which they grew to the tissues. Their other surfaces being free, and acting as foreign bodies, were surrounded by pus. There was one point, however, at the bottom of the wound, about one inch and a half long, which was firm and immovable and covered with healthy granulations. This was supposed (at the time) to be a portion of the clavicle from the posterior surface that had never been displaced, and as there was no collection of pus under or around it, it was not removed.

A chain saw was then passed under the distal fragment an inch from the broken end, the bone sawn in two, and the

fragment removed by dissection. Though no veins or arteries of any size were cut, he lost over half a pint of blood, the tissues being very vascular. A few sutures were taken; wet lint was applied; the patient was put to bed and morphine and whiskey were administered. December 28th.—Rested well last night; very pale and languid to-day; without appetite and with some diarrhoea; a counter opening was made into the abscess from which the ball had been extracted; prescribed one grain of opium, ordered eggs, whiskey, &c. December 29th.—Has a little more color in his cheeks to-day than he had yesterday; eat squirrel stew with great relish; bowels better; prescribed tr. catechu, gave whiskey, eggs, milk, &c.; the openings in the shoulder are discharging freely to-day, the discharge from the wound being much diminished. The swelling of the arm is so much reduced as to slacken the bandages, the first of which were applied on the 5th inst., and which had been re-applied every two or three days since. The arm reduced about one-third. December 30th and 31st.—Doing well. January 1st, 1864.—Doing well; appetite good; wound and incisions granulating; discharge from the wound much diminished, there not being enough to overflow the wound in twelve hours; the discharge from the anterior incision (in which a tent is kept) which is now the outlet from the abscess in the shoulder is less than the discharge was from the wound before the operation. January 7th.—Healthy granulations over the end of the bone, and, indeed, everywhere about the wound; discharge, which is from the shoulder, very slight. January 7th.—In the afternoon, some diarrhoea; prescribed tr. opii, tr. catechu in equal parts, twenty drops after each operation on bowels. January 14th.—Whiskey supplies have been out since the 7th; diarrhoea has been constant; prescribed tannin, catechu, opium, &c., with no effect; losing flesh and getting weaker. January 21st.—Diarrhoea constant; patient very weak; procured whiskey to-day. January 26th.—During past six days have had good supply of stimulants; patient very weak; diarrhoea continues; will probably not live till to-morrow. January 27th.—Died at one o'clock, P. M.

Post Mortem.—On making an incision from the wound, which had healed to a considerable extent, to the incision on the front part of the shoulder, and from there around to the posterior incision I found the track of a large abscess. This also extended downwards in front, and parallel with the pectoralis minor. At the bottom of this branch abscess there was a spicula of bone half an inch long. The ball had passed through to the head of the humerus, but had not broken it in two. It did not pass therefore in front of the shoulder, through the sinus by which it was extracted. Wherever any periosteum was left, bone was forming rapidly. The hard, firm place in the bottom of the wound, supposed during the operation to be a spicula from the posterior part of the clavicle, proved to be entirely new bony formation. The abscesses around the head of the humerus were large, and had burrowed back into the shoulder to some extent.

ART. IV.—*The Relations of the Periosteum to Osteogenesis.*

By E. S. GAILLARD, Surgeon and Medical Inspector.

In the practice and literature of surgery no fact is apparently more frequently accepted as truth than that the periosteum is necessary to osteogenesis; that it is indispensable for the vitality and reparation of bone.

By many of our respectable authorities, both in the library and in the lecture-room, this doctrine is, however, taught, and we are told that where bone is deprived of its periosteum it must die; that in such an event, it is the part of good surgery to anticipate nature in its removal.

It is not unusual at our operating tables to witness the removal of fragments of bone which, though stripped of their periosteal investment, have yet their histologic connection with the medullary structure uninjured; to see the chain-saw and bone-pliers applied to the extremities of bone which had been denuded of their periosteum.

If it can be demonstrated that the fragments thus removed would have soon co-operated in re-establishing osseous integrity, and that the ends of bones so mutilated would soon have been recovered with periosteum and restored by nature to their normal condition, it is evident that much of the surgical interference, now so frequently instituted, would be justly condemned, as injurious and unnecessary.

As in the animal economy "the blood is the life thereof," of course neither the original formation of bone, nor its reparation can occur without a physiologically complete circulation; if any tissue be deprived of its blood, either by obstruction of the circulation or as the result of violence, it must die.

The death of bone, when denuded of its periosteum, is attributed to this ostensible cause, that bone, for its growth, vitality and reparation, is dependent upon the blood obtained through the vessels of the periosteum. Is this a physiological truth?

It is of course known to every tyro in anatomy that the arteries distributed to bones are usually divided into three classes: the first class is that which is supplied from the periosteum; these vessels are small in character and indefinite in number, penetrating the cancellated structure of the bone, and inosculating, by their radicles, with the capillaries of the arteries of the second and third class. The arteries of the second class penetrate directly by foramina, the extremities of the long bones: in other bones they enter at no common point, but irregularly. The third class consists of the nutrient artery penetrating, by its proper foramen, near the centre of the bone.

"The arteries of the two first classes are generally extremely small and ramify upon the compact and cellular structure, penetrating it in every direction and anastomose with the radicles of the nutrient artery."—*Hörner*.

It is thus evident that the radicles of the nutrient artery freely anastomose, as well with the capillaries of the arteries penetrating the ends of the bones; as with those of the arteries derived from the periosteum and that in the event of the periosteum being destroyed, the cancellated

structure of the bone is fully supplied with blood, from the anastomosis existing between the radicles of the nutrient artery and the capillaries of the arteries penetrating the bones at their ends; or as may be more clearly and now briefly stated, the cancellated structure of the bone is, for its vitality and reparation, independent of the supply of blood derived from the arteries of the periosteum.

These facts are, of course, known to every student of anatomy; the only subject of uncertainty being in regard to the completeness of this capillary inosculation and its supplemental adequacy for sustaining the vitality of the cancellated structure, when the periosteal vessels have been ruptured. Several writers have contended that this anastomosis is entirely sufficient for the objects to be accomplished.

Mr. Cooper was of the opinion that "the external and internal periosteum bear strict resemblance to the cellular neurolemma of a nerve, to the membranous covering of the sarcolemma of a muscle and the parenchyma of the various viscera, each being for the same purpose, that of forming a nidus or basement membrane for the products eliminated from the blood." He also states that the importance of the medullary circulation, in the formation of bone, "may be proved by destroying the medullary membrane in the bone of a living animal, when the inflammation which is consequently set up, extends to the external periosteum;" showing thus the intimate connection existing not only between the medullary membrane and the periosteum, but between the medullary membrane and the cancellated structure, which is of course the medium of communication.

It is an important fact that Fleurens, in his experiments with madder, for determining the mode of histologic nutrition, observed that the coloring of bone was not centripetal in its tendency (showing thus the preponderance of the periosteal circulation) but that it was uniformly diffused, proving that bone derived its vitality and nutrition, as well from the medullary circulation, as from the vessels of the periosteum.

Craigil, in his elements of general and pathological anatomy, states that "though the periosteal vessels are the main agents of ossification originally, there is reason to believe that the medullary vessels contribute to its growth and nutrition, after it is formed. This may be inferred from the phenomena of fractures and of those experiments in which the medullary membrane is injured."

Collateral evidence, tending to prove that the periosteal investment is not essential to the production of bone, may be obtained from the phenomena of intra-uterine osteogony.

Many large and important muscles are, by extensive surfaces, attached directly to bone, no periosteum intervening and no evidence of its having intervened or been instrumental in the formation of such portions of these bones. These facts may be observed in the attachments of the quadriceps femoris, pectoralis major, deltoid, the latissimus dorsi, glutæi, coraco-brachialis, triceps, gastrocnemii, etc.; and also in the attachments of many ligaments; ligamentum patellæ, ilio-sacral, interosseous ligaments and the ligamenta subflava.—(Peaslee's Histology.)

It is thus evident, that in intra-uterine life bone is formed where the periosteum does not exist, and is independent of the periosteal vessels for its vitality and growth.

Though the medullary membrane has not been satisfactorily proved to exist in foetal life (Craigil) it is from the vessels forming, subsequently, the basis of this membrane that bone is developed and supported, where the periosteum is absent.

Is bone in extra-uterine life equally independent of the periosteum, in the event of injury or violence sustained by this membrane?

Peaslee, in his recent work on histology, asserts "that the question whether the plasma, from which the new osseous tissue is developed, is exuded by the periosteum or by other parts, is not as important as some authors seem to have held. Obviously, it makes no difference whether it be poured out by the vessels of the periosteum alone, (as it certainly is, in part,) or not. Whencesoever derived, however, it can be organized into bone, whilst in contact with bone. Hence the importance of leaving all the spiculae of bone (whether denuded of the periosteum or not) as centres of ossification, provided they are not so detached as to act as foreign bodies."

As satisfactory as is this evidence of the independence of bones (in their reparation) in regard to their periosteal investments, the testimony of Dr. Horner is still more complete.

This writer states that "some physiologists have attempted to give to the periosteum the exclusive credit of the formation of callus. This view is erroneous, because experiments show that even where the periosteum is stripped designedly from the fractured ends of bones, they nevertheless unite, and the periosteum is restored when the callus is formed." This testimony is particularly satisfactory, for it not only proves that bones denuded of their periosteum will unite independently of their periosteum, but that the periosteum is only re-developed *after* callus has been formed, and is consequently *not the agent of reparation*.

"The probability is that all the blood-vessels (from whatever source they come) which penetrate the organized coagulated lymph, exuded between the ends of fractured extremities, convey and deposit calcareous matter."—Horner.

In a lecture on conservative surgery, delivered at the Royal College of Surgeons, June, 1864, by Mr. William Ferguson, F. R. C. S.; F. R. S.; Professor of Surgery at this college, the following interesting testimony is given; the high position which this gentleman justly fills entitling his opinions to entire respect and confidence: "I believe it to be a common opinion that when a piece of bone is bare or a joint grates, there is no probability of recovery in the part, and that amputation is the proper course. This, however, is a great error: for bare bone is covered again in many instances and a joint may be still so far restored that there may be a certain amount of motion in it, if not, there may still be a cessation of disease, with a useful member. Even when bone is dead, nature causes a separation and thus leads the way to its removal, either by spontaneous evolution or by the hands of the surgeons, so that a limb may be retained," etc.

As facts are, however, by the practical surgeon more highly

esteemed than opinions and deductions, however plausible, a report of an interesting case tending to prove the truth of views herein considered, is now submitted. This case occurred at the General Hospital at Charlottesville, Virginia, in charge of Surgeon J. L. Cabell, through whose courtesy a report of it is herewith presented. The patient was immediately treated by Assistant-Surgeon F. L. Bronaugh in charge of the ward, and subject, throughout the history of the case, to the active supervision of Surgeon J. S. Davis in charge of the division.

Surgeons Cabell and Davis (in connection with Assistant-Surgeon Bronaugh) watched this case with interest and care, and there was on their part an entire unanimity relative to opinions stated in the report. These gentlemen are, of course, intimately familiar with the surgical literature in regard to such a case, and, in common with other high authorities cited, recognize the material fact that bony union is not absolutely dependent upon periosteal integrity.

The history of this case proves that, under the most unpromising circumstances, the ends of bones denuded of their periosteum will unite. It is, so far as has been observed, the only case occurring in this war tending to prove this fact, and one which, in its relations to conservative surgery, is both important and interesting.

"Sergeant W. G. P., company "B," South Carolina infantry, Kershaw's brigade, etc., was wounded at the Wilderness, May 6th, 1864, and received at this hospital May 12th; age 20; previous health good; by occupation, a farmer. The ball, presumed to be a conical leaden bullet, penetrated right buttock, four inches posterior to trochanter major, and passing obliquely forward and downward, emerged at a point two inches in front and one inch below the trochanter. When admitted the patient complained of great pain, was restless, desponding and feverish, with total want of appetite. The decubitus was left lateral, with right hip elevated and thrown forward. The daily arrival of a large number of cases demanding immediate attention, precluded the possibility of a very careful examination of this case until the 17th of May, at which time the patient was suffering from irritative fever, in an alarming degree. A hard tumor was felt just below the inferior limits of the trochanter, on the outer aspect of the limb; it was supposed to be due to a displaced and separated fragment of the shaft of the bone. The patient was placed under the influence of chloroform, and an incision made over the tumor, when it was ascertained that it was caused by the abduction (with flexion) of the upper fragments. The wound being explored with the finger, it was found that there was oblique fracture, without comminution, of the upper part of the shaft, and that the anterior aspect of the upper fragment was stripped of its periosteum for two inches, viz: to the point of insertion of the capsular ligament. The case was so very unpromising that the question of the application of Smith's anterior splint was discussed, more with a view to affording some temporary relief to the sufferer, than with a hope of ultimate success. The splint was applied on the 18th with the effect of giving immediate and great relief to the patient. The impossibility of overcoming the extreme abduction of the upper fragment rendered it necessary to place the entire limb in a corresponding direction. His improvement was marked in a few days. The inflammatory tumefaction underwent a rapid abatement; the fever subsided and appetite returned. No complication supervened. On the 28th of July a large sequestrum was removed in several pieces. It represented a scale of bone from the anterior aspect of the

upper fragment, and doubtless corresponded to the denuded portion above referred to. The splint had been removed on the 19th of July. He remained in bed until September 1st, when he made his first experiment by walking with the aid of crutches. His limb was shortened about two inches."

The importance of the periosteum is of course great, but is often overestimated.

Dr. Toland, of California, first brought to the notice of the profession in 1864, the fact that the phalanges of the fingers would be reformed, if the periosteum be preserved. This truth has been demonstrated in regard to other bones, and Dr. Peaslee, in his histology, states that the maxilla inferior, the costæ, the scapula and the clavicle have all been reformed under these conditions. M. Maisonneuve has recently removed the tibia with the same result. Heine states that a rudimentary bone has been formed, when the whole periosteum, as well as the bone, had been removed. It must be confessed that this statement is to be regarded as a tentative appeal to the credulity of the profession.

Since the publication of these cases, showing that entire bones may be reformed if their periosteum be preserved, the importance of this membrane has been more than ever exaggerated, and the assumption has been almost unconsciously made, that if necessary to the regeneration of an entire bone, it is equally necessary for the reparation of a part of it.

To sum up all that has been stated in this connection, it is evident that the prognosis which usually obtains, where bones are denuded of their periosteum, is not justified or warranted by recorded facts; that there is no physiological reason for assuming that bone, under such circumstances, will die, but, on the contrary, that it will usually be recovered with periosteum and restored to its normal condition.

If this be the truth, and if it be so recognized, surgical interference in all cases of denuded bone will be abandoned, and one step secured in the progress of conservative surgery.

* * * * *

NOTE.—In connection with the subject of conservative surgery, and in view of the great distrust with which resections of the knee-joint are regarded in our service (on account of the sad fatality which has attended these operations during the last campaign) it may not be inappropriate to briefly present statistics, recently furnished (June, 1864,) by Mr. Ferguson, Professor of Surgery in the Royal College of Surgeons, London.

Mr. Jones, of Jersey, performed this operation 15 times, with one death; Mr. Ferguson 40 times, with 15 deaths; at Exeter Hospital, 12 operations with no deaths; Dr. Humphrey has operated 13 times, with one death; at King's College there have been 10 operations performed, with one death.

Mr. Price has collected the records of 250 cases; the mortality in these is not greater than that which obtains in amputation through the lower third of the thigh. Many of these patients walked on crutches in six weeks, and some in three weeks after the operation.

Mr. Parke was the first to perform this operation in surgery; period, 1782.

This patient of Mr. Parke made several voyages to sea, in which he was able to go aloft with considerable agility, and to perform all the duties of a common seaman.

These facts are stated that those who (from the records of our

service) are skeptical as to the propriety and policy of this operation may be induced to reconsider the subject and save their patients from the terrible mutilation which must otherwise befall them.

When such excellent comparative results are obtained by Confederate surgeons in the other domains of surgery, there is no reason why this field (so far a Golgotha) should be avoided and proscribed.

Acknowledgment is, with pleasure, made to Surgeon A. M. Fauntleroy for many facts presented in this paper.

ART. V.—*Gun-Shot Wound of the Chest Treated by Hermetically Sealing.* Reported by P. F. BROWNE, Surgeon in Charge 1st Division Chimborazo Hospital.

Private J. W. Branson, company "C," 9th Virginia cavalry, was wounded July 29th, 1864, by a minie ball, which entered the right side of the chest, about three inches below the axilla, traversed the right lung, and was removed by counter-incision near the spinal column on a level with the orifice of entrance.

There was bleeding from the lung at the time the wound was received—he was brought directly from the field to the hospital, and in less than twenty-four hours after the wound was received. He was a strong, athletic man, about twenty-seven years of age. It was decided, as the wound had been so recently received, and his condition every way favorable, to treat the case by hermetically sealing the wound. The orifice of entrance was carefully closed by means of thin layers of cotton, saturated with collodion; these were renewed as often as found necessary to prevent introduction of air in the chest—in a word, the wound was kept hermetically sealed. The case progressed favorably, attended by only slight circumscribed inflammation of the lung, some effusion in the pleural cavity and a little fever. These were so slight as to require but little treatment. The patient, at the time of his reception, and for several weeks afterwards, complained of great soreness of both sides of the chest—more of the left than the right; this soreness was increased by the slightest pressure. He attributed, and I think justly, this soreness to a severe fall from his horse at the time he was wounded. Under appropriate treatment and rest the soreness gradually subsided, and the patient when fairly convalescent and walking about the ward was furloughed, and left in a carriage for his home in Westmoreland county, Virginia, with every reason to expect a speedy and perfect recovery.

How far the favorable result in this case is attributable to the treatment pursued, I will not undertake to decide. I report the case to accumulate facts on which fair and safe deductions may hereafter be drawn of the success of treating gun-shot wounds of the chest by "hermetically sealing."

Ligation of the External Iliac for Traumatic Aneurism of the Femoral Artery.

Private B. B. Brown, company "C," 9th Virginia cavalry, was wounded June 24th, 1864, by a small ball, apparently a buckshot or pistol ball, which entered the left groin just be-

low Poupart's ligament, grazing the femoral artery on its outer side, and passing entirely through the ramus of the pubis near the ilio pectineal eminence. The patient was a strong, healthy man, about twenty-four years of age. When admitted into division No. 1, July 3d, he complained of no pain at the seat of injury of any consequence, except at night. The paroxysm came on regularly, shortly after sundown.

There was but little pain on pressure in the immediate neighborhood of the wound; no tenderness over the abdomen, and no appreciable swelling at the mouth of the wound, which presented a very healthy appearance. He had no fever; appetite very good, and bowels moved regularly every day. There was, however, considerable soreness and pain on pressure on the inner side of the thigh, just below the origin of the gracilis muscle, and for which there was no satisfactory means of accounting, as there was no swelling and no visible sign of inflammation at that spot.

All efforts to introduce a probe into the wound were unavailing—it would follow the track of the ball to the bone where it met with a resistance that could not be overcome.

He continued to do well till the morning of July 14th, when a pulsating tumor was discovered at the seat of injury, small, but having the distinct thrill and bruit characteristic of aneurism. The tumor increased rapidly in size, and it was determined to try the effect of digital compression—ten men were, therefore, detailed, and instructed how to keep up pressure just above the aneurism, with a key well padded, relieving each other every half hour. Finding this inefficient and not to be depended on, a compressor was constructed, consisting of an upright firmly attached to the side of the bed, with a horizontal limb projecting, to which a second piece was attached by an iron bolt, and pierced by two holes to accommodate two large wooden screws. These screws were furnished with oval blocks covered with kid tightly drawn. One screw pressed on the cardiac side and one on the distal side of the tumor, and relieved each other at regular intervals.

By this arrangement the circulation could be perfectly restrained. Pressure was kept up for three days and nights, allowing a very small stream to pass through the wounded vessel. At the expiration of this time the skin began to slough to such an extent that the pressure had to be discontinued. The tumor had not diminished, though it had not increased in size. The thrill and bruit were as well marked as ever and the pulsation very plain. It then became a necessity to ligate the external iliac at once. The operation was performed July 18th, by Assistant-Surgeon J. C. Baylor.

A curvilinear incision four and a half inches in length, beginning one and a half inches above Poupart's ligament, and near the internal abdominal ring, and ending opposite to the superior anterior spinous process of the ilium.

Not an ounce of blood was lost during the operation, and no difficulties of any moment were met with at any step. One very small subcutaneous artery was divided by the first incision, and instantly secured by a ligature. The peritoneum was healthy in appearance, and was easily pushed aside to make room for the application of the ligature. The artery

was tied about its middle. All pulsation in the tumor ceased as soon as the ligature was fastened. The wound was then brought together by interrupted suture, extended down through the muscles and fascia, so as to bring all parts of the wound in apposition. He was then carried back to bed, the leg placed in a flexed position, and forty drops tr. opii. administered.

Next morning, July 19th, he expressed himself as feeling very comfortable. Had passed a very good night. He ate his breakfast with much relish; pulse 120. There was some swelling and puffiness about the incision, and slight pain on pressure over the abdomen in its immediate neighborhood. July 20th.—Suffers no pain; puffiness and swelling around the incision much diminished; considerable soreness, but extending only a few inches from the wound; quite a free discharge of muddy pus; pulse 110. He was ordered an enema of ol ricini and soapsuds. July 21st.—Doing very well; pus healthy; discharge from the wound quite free; pulse 110; bowels moved slightly by the enema. July 23d.—Condition very favorable; sleeps well; appetite good; soreness very much diminished; swelling disappeared; pulse 100. July 25th.—Continues to do well; appetite very good; bowels regular; no soreness on pressure over the abdomen; wound granulating finely; pulse 95; July 28th.—Pulse 112; has suffered much for the last two days from involuntary contractions and starting of the wounded limb; appetite good; wound looks well, and healing rapidly.

From this time till August 8th the case progressed very favorably. An amount of irritability was perceptible in the pulse, however, that the healthy appearance of his wound did not justify, and could not be accounted for. The incision healed up very prettily. Ligature came away on the 15th day; very slight discharge of pus, not more than a teaspoonful in twenty-four hours. Quite an extensive slough had taken place in two spots where the screws had pressed; the lower one was a deep excavation, caused by the suppuration of several of the inguinal glands. This place had commenced to fill up, and presented a clean and healthy appearance.

On August 8th, while his wounds were being dressed, a sudden and very free discharge of urine, mingled with pus, burst from the excavation, and as such an accident was entirely unexpected, it created much surprise. On questioning the patient closely he mentioned, for the first time, that he had passed blood very freely from the urethra shortly after he was wounded, and that a catheter had been kept in the bladder the whole night by the surgeon on the field. Urine continued to ooze during the day very freely, and a catheter was introduced and fastened in the bladder. This diminished the flow of urine from the wound, but caused so much irritation that it had to be withdrawn.

After the removal of the catheter he passed urine through the urethra several times a day, while the flow from the wound gradually decreased till, at the end of a week, it passed almost exclusively through the natural channel.

A large bed sore had formed, in the meantime, over the sacrum, and from this also urine began to flow. He now lost

flesh rapidly. His pulse became very weak and frequent. Stimulants were freely administered to him, but he sank, and died August 22d, 1864.

This case presents many points of interest:

1st. The failure of compression to relieve the aneurism through digital and instrumental means were successively employed.

2d. The entire success of the operation, and obliteration of the aneurismal tumor by ligation of the external iliac.

3d. There was no recurrent hemorrhage, though the patient lived thirty-five days after the operation.

4th. There was no diminution of warmth in the leg.

5th. The death of the patient from sloughing of the bladder and discharge of urine through the wound, caused evidently by the ball at the time the wound was received. No autopsy could be held, and the exact course of the ball of course remains unknown, as also the amount of injury inflicted by it on the internal parts.

CHRONICLE OF MEDICAL SCIENCE.

Splint for Compound Fractures. By S. STACK SKIPTON, M. D., Assistant-Surgeon 78th Highlanders.

I am anxious to bring to the notice of the members of the Royal United Service Institution, by means of this paper, a design of an apparatus or splint for "compound" fractures of the limb, i. e., those fractures accompanied with a wound which exposes the fractured bone to the air, such as are caused by gun-shot or other missiles of war.

In the surgical treatment of these injuries, in themselves always serious to the safety of the limb, if not actually dangerous to life, the great object is to apply a splint to support the broken bones in their proper position, at the same time that the wound or wounds in the limb may be left exposed for the application of the requisite dressings.

In the military service, and especially with an army in the field, it cannot be expected that the officers of the medical department can have access to the same resources that are available to the surgeons of a civil hospital, who are surrounded by all the materials which a liberal management permit them to make use of, modify and cut up, if need be, in order to meet the requirements of any one particular case under their care, and so render these materials useless for future casualties, unless they present precisely the same conditions as the former one. With medical officers in the army, on the contrary, economy in the amount of supplies of surgical apparatus is a primary consideration, and especially so under those circumstances in which they are likely to be most required with an army in the field in the presence of the enemy.

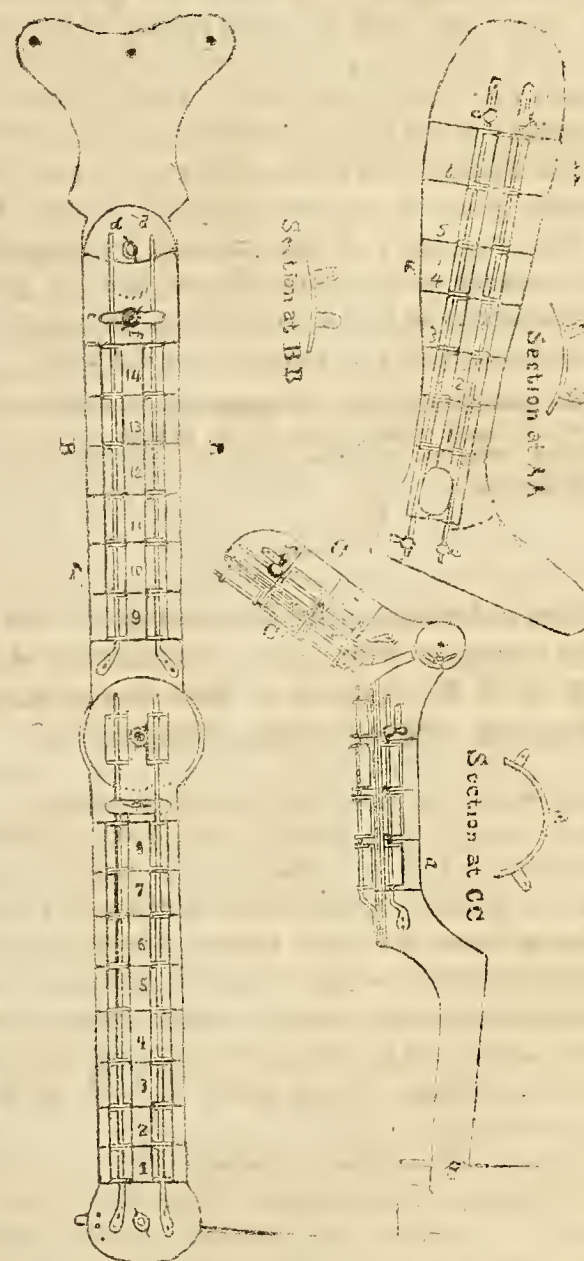
In the hospitals at Scutari and in the Crimea in 1854-'55, when the wounded arrived from the battle-fields of Alma, Balaklava, and Inkermann, and from the trenches before Sebastopol, it was distressing to see them lying with fractures of the limbs from gun-shot injuries, for which no apparatus could be extemporized to meet the requirements of the vast majority of these cases. The medical officers were therefore

compelled to use the ordinary splints from the stores, and, unfortunately, from the site of the wound being in the course of the splint, and requiring washing and dressing every day, the poor sufferer, officer or private, was daily put to the severe pain consequent upon the splint being removed, the wound cleaned and dressed *without any adequate support to the injured limb*, and the splint itself, which should have rendered this needful support to the broken bones, re-applied. Only those who have themselves suffered from a broken limb, and know what is the pain of having "the bones set" can form an idea of the suffering entailed upon our wounded; and, when we consider the constant state of fever which was maintained by this frequent but unavoidable meddling with the broken bone, it is not to be wondered at that so many of these severe injuries terminated unfavorably, necessitating, at the least, the sacrifice of the limb.

As, then, the requirements of the military service deny to a surgeon in the field the great advantages possessed by a civilian surgeon, and render it necessary for the former to regard, while consistent with their complete efficiency, the portability, simplicity and durability of his surgical apparatus, with economy also in the number and sizes of the splints he carries in his hospital stores, an apparatus or splint so designed as to meet all these requirements struck me as being not only desirable, but exceedingly necessary, and such, I trust, will that be found a description of which I have now the gratification of submitting. The shape of the splints for the various limbs remains the same as those in common use, and the material best fitted for rough usage on a campaign, and which is by far the most cleanly of all, is the thin sheet iron laguered over, such as the ordinary splints have heretofore been made of. My object being to provide a splint, the surface of which might be capable of being interrupted at any part of its length, where, when applied to the limb, it might cover the site of a wound. I have taken away one of the common splints, cut across into transverse strips, each of a width sufficient when removed to uncover a space the size of a gun-shot wound, and at the back of these transverse strips placed vertical plates having holes pierced therein for a longitudinal bar, running along the back of the splint, to pass through; the terminal pieces of the splint are fixed to these longitudinal bars by rivets or screws at either end.

The accompanying drawing of the various splints, depicting a side-plan view of a splint for the arm and forearm, leg and thigh respectively, show each to be composed of transverse strips (see cut *a a*) which, placed side by side, form the shape of the required splint; upon each of these are fixed vertical plates, *b b*, (shown in a front view at the sections *a*, *a*, *b*, *b*, *c*, *c*) which have a hole pierced therein for a longitudinal bar, *d d* to pass through; each terminal piece of the splint is supplied with pillars *e*, *e*, and set screws *f*, *f*, or rivets to keep these pieces in their respective positions and required distances on the bars. Each transverse strip being numbered consecutively, no mistake need occur by their becoming misplaced, and thereby disarranging the shape of the splint. By loosening the screws and withdrawing the terminal piece from the bars, any one or more of the transverse pieces covering the site of a wound may be removed and set aside, and the terminal piece and the others replaced in their former position. The splint thus applied, and bound on the limb with straps passing under the bars, presents an

interruption on its surface, and, by leaving the wound uncovered, gives facility for cleansing and dressing it, without disturbing the support of the splint on the limb. The distance between the bars and the surface of the splint, or rather of the limb to which it is applied, renders any manipulation to the wound practicable and easy, and at the same time the patient is saved the agony and suffering, and consequent irritative fever, caused by having to remove and re-apply the splint to the broken limb after dressing the wound. Another advantage attendant upon this apparatus is, that the "pads" or cushions between the splint and the limb, and the bandages or straps which secure it to the limb, are more easily retained in a cleanly state; a desideratum to be appreciated chiefly by those who have served and suffered these injuries in a hot climate—such as that in which our campaigns have hitherto been carried on.



I have described the principal advantages which this apparatus possesses above the common splint heretofore in use; but there is one other yet to be mentioned, and which, with the above, it exclusively presents; and one especially to be appreciated by our medical officers, whose resources as regards the numbers of the various sizes of splints must be considerably limited, whether at home or abroad. This consists in the same splint which, at the full length of the longitudinal bars, would be sufficiently long for a tall man, being capable of reduction in length by removing one or more of the transverse strips, and bringing down the termi-

nal pieces along the bars, and so making the splint short enough for a drummer boy; thus relieving another great necessity of the service, economy in the numbers of the splints supplied to a force, and ensuring more comfort to the patient than he would have experienced from such apparatus as we had for use at Scutari, in 1854, and later, during the Indian mutiny, where, in many instances, owing to the enormous number of wounded suddenly taken under treatment, the splints were, in addition to their great disadvantages above referred to, either too short or too long for some particular case.

While the above would appear to be sufficient to recommend its adoption in those instances in which there is a wound co-existent with the fracture, this splint may also be used in cases in which there is no wound, in which the fracture is styled "simple." In these the transverse strips would be left on the bars, no interruption of the surface of the splint being required, and the only objection to be raised against them, viz: their slight extra weight, which the additional quantity in the material of the bars, &c., renders unavoidable—is discarded as immaterial when we consider that the patient is lying in bed, and required to keep his limb perfectly still, especially if the fracture be compound. If the arm or forearm be the limb affected, and the patient be so far convalescent as to be allowed to be up, this extra weight is then supported in a sling from the neck.

NOTE.—The manufacturers of this apparatus are Messrs. Whicker & Blaise (late Savigny & Co.) No. 67 St. James' street, Pall Mall, S. W., (London) who supply the army medical department with surgical instruments.

Extracts from a Lecture on the Laryngoscope. Delivered at the Royal College of Physicians. By GEORGE JOHNSON, M. D., F. R. C. P., Professor of Medicine in King's College; Physician to King's College Hospital.

The laryngoscope is a small mirror, fixed on a stem, or handle, of convenient length. This mirror, having first been warmed to prevent the dimming of its surface by the patient's breath, is placed in such a position obliquely beneath the palate that, while it reflects the light from the mouth into the larynx, it reflects back an image of the larynx to the eye of the observer. There are various means, as we shall presently see, for throwing a strong light upon the mirror, but the laryngoscope is simply a small looking glass—a contrivance "whose end is to hold, as 'twere, the mirror up to nature."

Now it appears not a little remarkable that a method of exploring the larynx at once so simple and so effectual should not have come earlier into use—that it should have been reserved for the workers of the present to devise a plan by which literally a new light has been thrown upon a very common, painful, and fatal class of diseases.

Attempts to examine the larynx by means of a mirror have, at different times, been made independently by various experimenters. One of the first, if not the very earliest, of these attempts was made by a distinguished Fellow of this College—I mean Dr. Babington, who showed his instrument at a meeting of the Hunterian Society in March, 1829—i. e., thirty-five years ago. The instrument was essentially the same as that now in use, and the following description of it was published in the third volume of the *Medical Gazette*, p. 555. "It consisted of an oblong piece of

looking-glass set in silver wire, with a long shank. The reflecting portion is placed against the palate, whilst the tongue is held down by a spatula, when the epiglottis and the upper part of the larynx become visible in the glass." The report adds that "the Doctor proposed to call it the *glottiscope*." Dr. Babington afterwards had his mirror made of polished steel, and in one he combined a tongue-depressor with the mirror. He also had one mirror of ovoid shape, which was convenient for use when the tonsils were enlarged. Dr. Babington tells me that he was in the habit of illuminating the throat by reflecting the light of the sun from a mirror held in the left hand. It was long after Dr. Babington had published the account of his *glottiscope* that Mr. Liston, in his "Practical Surgery," (1840,) referred to the use of a dentist's mirror for obtaining a view of the glottis.

MM. Trousseau and Belloc, in a treatise on Laryngeal Phthisis, which was published in the year 1837, refer to a *speculum laryngis*. It was made by M. Selligie, an ingenious mechanic, who had himself suffered from laryngeal phthisis. The instrument consisted of two tubes, through one of which the light was thrown on the glottis, while through the other the image of the glottis was reflected from a mirror placed at its guttural extremity. The authors state that the instrument was very difficult of application, and that no one person in ten could bear its introduction.

The late Mr. Avery worked long and successfully in the construction of a laryngoscope and other instruments for the examination of internal organs, but he published nothing on the subject.*

In the year 1844 the late Dr. Warden invented a prismatic speculum, with which he succeeded in seeing disease of the glottis in two cases.†

It is a well-known fact that the first experimenter who succeeded in obtaining a view of his own larynx is a distinguished professor of music in this town, M. Garcia. M. Garcia had long studied the anatomy and physiology of the larynx as the organ of voice, and he had a great desire to see the movement of the living larynx. At length he obtained the desired object by a very simple plan. Standing with his back to the sun, he held a looking-glass in his left hand before his face; the sun's rays were reflected by the glass into his open mouth. Then he introduced a dentist's mirror, previously warmed, into the back of his mouth, and thus he saw the reflection of his larynx in the looking-glass.

M. Garcia gave the results of his observations in a very interesting paper entitled "Physiological Observations on the Human Voice," which was published in the "Proceedings" of the Royal Society in the year 1855. This paper was destined to be the germ of further important observations and discoveries. It became known to Dr. Turck, of Vienna, and it induced him to use the laryngeal mirror in the wards of the General Hospital there during the year 1857. Towards the end of that year Dr. Turck lent his mirror to Dr. Czermak, who set to work with great zeal and energy. He soon made the important step of adopting the large ophthalmoscope reflector as a means of concentrating artificial light, thus making the laryngoscope available at all times as a means of inspecting the larynx, and of guiding the hand in the application of local remedies. Czermak soon saw, as he says, the practical value of the instrument, and he has been most energetic and most successful in his efforts to secure its recognition by the whole civilized world.

It appears to me that, without injustice to those who had pre-

* Introduction to the Art of Laryngoscopy. By Dr. Yearsley, 1862.

† British and Foreign Medico-Chirurgical Review, Jan., 1863, p. 10.

ceded him, Garcia's claims to originality in the matter of auto-laryngoscopy being obviously quite distinct and indisputable—Czermak may be considered to be the discoverer of the art of laryngoscopy in its application to the diagnosis and treatment of disease. He was also the first to practice the kindred art of rhinoscopy.

Sydney Smith, in discussing the rival claims of discoverers, has said, "That man is not the first discoverer of any art who first says the thing; but he who says it so long, and so loud, and so clearly, that he compels mankind to hear him—the man who is so deeply impressed with the importance of his discovery that he will take no denial; but at the risk of fortune and fame, pushes through all opposition, and is determined that what he thinks he has discovered shall not perish for want of a fair trial." On grounds such as these—not of priority in time, but in persevering and successful efforts to render the method practically available—Czermak has established strong claims to be considered the discoverer, as he has unquestionably been the great improver and the great teacher, of the arts of laryngoscopy and rhinoscopy, in their application to the diagnosis and treatment of disease.*

I propose now to describe the method of using the laryngoscope.

And, first as to the mode of illuminating the throat. The plan which is generally adopted is to reflect the light of the sun or of a lamp into the throat by means of a concave mirror, which is fixed on the forehead or in front of one eye of the operator.

The operator always sits opposite to the patient. When sunlight is used, the patient is placed with his back to the sun. When a lamp is employed, it is placed usually to the right side of the patient's head and on the same level, or a little above. In using artificial light, it is unnecessary to darken the room more than may be done by simply drawing down a blind, so as to lessen the glare of daylight. Now the question arises, should the reflector be perforated and placed in front of one eye, so that we look through it into the patient's throat, or is it better placed on the forehead just above the eyes? in which case it is unnecessary to have the mirror perforated. I believe that the best position for the reflector is above both eyes and not in front of one, and as this is a point of considerable importance, I must give the reasons for my belief.

With the reflector on the forehead we avoid the discomfort and inconvenience resulting from the effort required to keep one eye applied to the opening in the mirror. We have the free and unimpeded use of both eyes, and we consequently find it much easier to direct the light into the patient's throat, to introduce the laryngeal mirror, and to practise any other manipulation that may be required either for diagnosis or treatment. Another incidental advantage attending the position of the reflector on the forehead is, that we thus get a more extended movement of the reflector in all directions. This free movement enables us readily to change the direction of the light when we are examining our patient, and it also facilitates a very simple mode of auto-laryngoscopy of which I shall presently have to speak. The question then arises are there advantages to be gained by looking through a perforated reflector which in any degree compensates for its manifest inconveniences? I know of none, and I believe that none exist. The practice of using a perforated reflector was borrowed from the ophthalmoscope; but the conditions which attend the exploration of the interior of the eye through the small opening of the pupil are very different from those which exist when we are looking

through the wide open mouth at an image of the larynx reflected from a mirror of considerable size. In the latter case there is nothing gained by looking through the centre of a perforated reflector. I have fully tested this, not only in the examination of the larynx, but also by an experiment of this kind. Place a stethoscope, with the ear-piece downwards, on the table in front of you. Hold a laryngeal mirror obliquely over the upper end of the stethoscope, so as to reflect the interior of the tube, throwing the light of a candle on the mirror by means of the concave reflector placed at one time on the forehead, at another in front of one eye. You will find that, as regards the facility of illuminating the interior of the tube and seeing its image in the mirror, the position of the reflector makes not the slightest difference.

I have met with very few persons who have tried both methods, fail to appreciate the great convenience and advantage of having the reflector on the forehead rather than in front of one eye. Some who have become accustomed to the latter plan are unwilling to change it. Czermak not only keeps the reflector in front of the right eye, but he holds the apparatus between his teeth—a practice in which he has found very few imitators. M. Garcia[†] states, with regard to the use of a perforated mirror, that he tried it in order that Drs. Sharpey and Williamson might observe his larynx while he experimented upon himself. He found, however, that this was not attended by any marked advantage. They could see the reflected image of his larynx as well as by looking over the top of the mirror as by looking through its perforated centre.

I made the same observation when looking into Czermak's throat while he was using his auto-laryngoscopic apparatus; I could see his larynx as well by the side of the reflector as through its centre. When I am examining the larynx of a patient, if I wish to make the parts visible to another, I can readily do this by turning the face of the laryngeal mirror slightly towards one side, and directing the observer to look over my shoulder at the mirror in the throat. In order to see the image in the larynx it is unnecessary that the eye should be even near the margin of the reflector, much less is it necessary that the eye should look through the centre of the reflector.

The reflector when in front of the eye, therefore, being a source of much discomfort and inconvenience, without any compensating advantage, is better placed on the forehead just above the eyes.

The faucial or laryngeal mirror is made of different forms—square, with the angles rounded off, circular or oval. The form of the mirror is of little consequence. I find, however, that a circular mirror irritates the back of the pharynx less than a square one; I therefore prefer the circular form. Silvered glass mirrors are to be preferred to those made of steel or other metal. Metallic mirrors soon lose their polish, and they quickly cool, and thus become dimmed by the breath.

The mirror is to be warmed by holding it over the lamp or by dipping it into warm water. Its temperature should be tested by bringing it in contact with the cheek or the hand of the operator. It should be warm enough to prevent its being dimmed by the patient's breath.† There are two reasons for not over-heating the mirror—first, the patient's mouth will be burned; and, second, the silvering of the mirror will be spoiled.

The mirror is to be held like a pen, between the thumb and two fingers, and introduced so as to slightly raise the uvula and soft palate. Care must be taken to avoid touching the tongue, and as

*Notice sur l'Invention du Laryngoscope, par Paulin Richard. Paris, 1861. p. 14.

†Dr. Buzzard (Lancet, August 1864,) advises the application of a little dilute glycerine to prevent the aqueous deposit on the mirror.

* Dr. Christie, of Aberdeen, claims for Levret the original suggestion of such an instrument. L'art des Accouchements, Paris, 1743.

much as possible the back of the pharynx, with the mirror, these being the most sensitive parts within the mouth. The hand of the operator may be kept steady by resting the third and fourth fingers on the chin of the patient.

I have said that we must not touch the tongue with the mirror, but how is this to be avoided? You will find that, very generally, as soon as the mirror is introduced between the teeth, the tongue involuntarily rises towards the roof of the mouth, so as to come in contact with the mirror and obstruct the view; and, in fact, the tongue is one of the most frequent and most serious impediments in the way of laryngoscopy. There are various modes of dealing with this unruly member.

In some few cases the patient has sufficient control over the tongue to hold it down by a voluntary effort while the laryngeal mirror is being introduced. This power, however, is rarely acquired until after a considerable amount of practice, and in most instances the tongue has to be kept out of the way by some mechanical means. The plan which usually succeeds best is to hold the tip of the tongue between the thumb and the forefinger, and to draw it gently forward over the lower teeth. This may be done by the operator with his left hand, or by the patient, the thumb and finger which hold the tongue being covered by a cotton glove, or by a towel or handkerchief.

In some cases a *metallic tongue-depressor* may be used with advantage, or the tongue may be pressed down by the fore-finger of the operator's left hand. But it will usually be found that one effect of depressing the tongue in front is to push it backwards at the base, so that it nearly or quite touches the back of the pharynx, thus intercepting the light; while another effect is to make the tongue arch upwards, so as nearly to touch the roof of the mouth. This arched position of the tongue obstructs the passage of the light to and from the larynx; often, too, it brings the tongue in contact with the mirror, and this excites nausea. For these reasons the attempt to depress the tongue is usually less successful than its gentle traction forwards.

I have before said that the laryngeal mirror is to be introduced so as slightly to raise the uvula and soft palate. The uvula must not be allowed to project below the mirror. The end of a long uvula hanging below the mirror has its image reflected in the glass, and this obscures the view of the larynx. The uvula and the soft palate are the least sensitive parts with which the mirror can come in contact. The posterior wall of the pharynx is usually more sensitive, and care should be taken to disturb it as little as possible. Frequently, however, the pharynx bears the touch of the mirror as well as the uvula and soft palate.

The mirror being placed in an oblique position below the palate, we usually at once obtain a view of the larynx. A little practice will enable you to make such changes in the position of the mirror, or of the patient or in the direction of the light, as may be required to bring the parts fully into view. It should be borne in mind that the larynx, as it appears in the mirror, is reversed; so that we get the same view as we have when, examining the larynx after death, we look at it from behind. The arytenoid cartilages are nearest to the eye; the insertion of the vocal cords into the thyroid cartilage is more distant. We also see the anterior wall of the trachea as if we were looking into the tube from behind. We see that during inspiration the glottis is a wide triangular opening of considerable size, the vocal cords being of a pearly white color. During speaking—as in pronouncing the syllable “eh”—the glottis closes, and the cords vibrate with the impulse of the expired air.

It is important to practice the introduction of the laryngeal mir-

ror with the *left* hand as well as with the right. In applying local remedies to the larynx the patient is instructed to manipulate his own tongue while the operator, holding the mirror with the left hand so as to obtain a view of the larynx, uses his right hand for the introduction of the brush or other instrument.

But how does the throat bear the contact of the mirror? Does not its introduction excite retching and cough and dyspnoea, and other unpleasant sensations? These questions are often asked by those who have had no experience in laryngoscopy; but those who have experience are unanimous in declaring that, in the great majority of cases, none of these unpleasant results attend the introduction of the mirror into the fauces. In some instances, however, we meet with difficulties in the use of the instrument. I will briefly refer to some of these, and will give some hints as to the best mode of meeting them.

First, then, some persons have a propensity to throw the tongue forcibly upwards towards the roof of the mouth; and they do this with a provoking pertinacity just as the mirror is being introduced between the teeth. This position of the tongue offers a serious impediment to the introduction of the mirror, and the obstruction is greater in proportion to the size of the rebellious tongue. It is usually a result of nervousness on the part of the patient, and is sure to be made worse by any appearance of petulance in the operator. The better plan is to endeavor to reassure the patient. Sometimes the occupation of holding his own tongue has a good effect by diverting his attention, and occasionally, while he is holding the tip of his tongue, you may depress the dorsum with a spatula or with your finger. In some instances, after making one or two attempts, it is better to defer examination to a future day. After two or three sittings, there is usually less nervousness, and the tongue comes more under control.

[Dr. Watson, after hearing this lecture, told me that in the case of patients who have this tendency to arch up the tongue, and so to prevent the examination of the fauces, he directs them to practise by sitting in front of a looking-glass with the mouth open. The inspection of the tongue, while they are endeavouring to acquire the power of controlling its movements, is found to be a great assistance.]

Another impediment to the examination of the larynx results from unusual sensitiveness of the fauces, so that the touch of the mirror excites contraction of the pharynx and retching. This excessive sensibility is common when the fauces are in a state of inflammatory congestion; so that, seeing the throat engorged and red, we may anticipate a difficulty in the examination of the larynx. There are two modes of lessening the sensibility of the throat in such cases. One is, to direct the patient to keep a lump of ice in his mouth for ten or fifteen minutes before the examination, and as the ice melts, to swallow the cold water. Another, and I think a more effectual plan, is to put twenty drops of chloroform on a handkerchief and let him inhale it for a minute: I have found this successful in quieting the most irritable throats, and that without rendering the patient in the least degree drowsy or uncomfortable. The bromide of potassium, when swallowed or used as a gargle, has long been supposed to have the effect of lessening the reflex sensibility of the fauces, but in the few cases in which I have tried it for this purpose it has appeared to be quite inert; Semeleder states, too, that he has not obtained the desired result from this salt.

It will usually be found that the repeated introduction of the faucial mirror at intervals of a day or two has the effect of lessening the sensibility of the throat, so that after a short time the most sensitive throat becomes tolerant of the mirror.

I have found that patients laboring under acute laryngitis and other organic diseases which are attended with much suffering usually bear the examination well, and often better than others who have but trifling ailments, or none at all. The man who is threatened with suffocation will submit to any proceeding which affords him hope of relief, and the distress in his larynx is so great that he is scarcely conscious of the trifling irritation caused by the faucial mirror; so true is it that

"Where the greater malady is fixed
The lesser is scarce felt."

Enlargement of the tonsils may render the examination of the larynx difficult or impossible. A small mirror may be used when the enlargement is not excessive; but if the tonsils are so much enlarged as to touch each other, a laryngoscopic examination is impracticable.

The epiglottis is some times very long, and projects obliquely downwards and backwards, so as to make it impossible to throw the light beneath it, and to get a view of the larynx. The arch of the epiglottis too, is sometimes so contracted as to obstruct the entrance of the light.

Semelede^{er}* gives us the result of his experience that in about 25 per cent. of adults he got a perfect view of the larynx easily at the first examination; in about 5 per cent. it was impossible to see the larynx at all; in the remainder he succeeded more or less completely after repeated examinations. In children from two years of age and upwards the proportion of failures is much greater.

In the practice of auto-laryngoscopy, whether in the examination of one's own larynx or that of others, it is of primary importance that the operator should have the power of readily changing the direction of the light, so as at once to adapt it to the varying position of the body, which is often required for the thorough exploration of the larynx. A feebler light which can readily be reflected in any required direction, is of more practical value in laryngoscopy than a stronger light which is fixed.

Some laryngoscopists on the continent, and Dr. Walker of Peterborough, do not use the reflector for the purpose of lighting the throat, but in place of it they get a direct illumination of the fauces by means of a concentrated fixed light. A globular bottle of water in front of a lamp is used as a powerful condensing lens. In this way, certainly, a very bright light is obtained; but the objections to this mode of illumination are—1st, that the apparatus is clumsy, and cannot be carried about; and, 2nd, the chief objection is that the direction of the light cannot be readily and instantaneously made to follow the movements of the patient's head. The fact of the light moving with the movements of the operator, which some consider an objection to the method of illuminating the throat by means of the reflector on the forehead, does, in fact, constitute one of its chief advantages.

With regard to the source of the light, I find it not difficult to see and to demonstrate my own larynx, as well as to examine the larynx of another, by the light of an ordinary candle; but a bright light renders the examination much easier and more satisfactory. The best artificial light is a wind-lamp, or an argand gas-burner. The light may be much intensified by placing a metallic reflector behind the lamp, and a bull's-eye condenser at the proper focal distance in front, the flat side of the lens being next the lamp. I find that with a single bull's-eye condenser I

get a better light than with Tobold's condenser which consists of three lenses in a brass tube, and which is a more cumbersome as well as a more costly apparatus.

All observers agree in opinion that the light of the sun, when it can be obtained, is the best means of illuminating the throat. The patient sits with his back to the sun, and the operator directs the light into the throat by means of a reflector. For this purpose the reflector need not be concave; a flat surface will give sufficient light. In using a concave reflector with sunlight, you must be careful not to burn the throat by concentrating the rays into a focus. *Solar caustic*, be it remembered, may be made more powerful than *lunar caustic*. [Since this lecture was given I have found that the best mode of using sunlight in laryngoscopy is to place a looking glass in such a position that it shall deflect the sun's rays on the frontal reflector, but leave the eyes of the operator in the shade. In this way we avoid the serious inconvenience which results from exposing the eyes to the direct rays of the sun. Both the patient and the operator are in the shade, a column of light being turned upon the frontal reflector by the looking-glass.] With sunlight it is not absolutely necessary to use the frontal reflector. The patient may face the sun, so that the rays fall directly upon the laryngeal mirror. But here, again, the advantage of the reflector consists in the facility with which it enables you in a moment to change the direction of the light.

The reflector on the forehead is a very useful means of lighting the throat for the purpose of examining the tonsils, palate, and pharynx. Placing a lamp or a candle by the side of the patient, or using sunlight when it is available, the operator, with the reflector on his forehead, throws the light into the throat, and has both his hands free to depress the tongue and to apply caustic or other local remedies. In cases of diphtheria and scarlatina, by this method of illumination a thorough examination of the throat can be made in a much shorter time than by the ordinary method, and without the necessity of raising the patient's head from the pillow. The operator in this way runs less risk of infection from inhaling the patient's breath, or from the morbid secretions being coughed into his face.

In the presence of a learned assembly, such as I have now the honor to address, it is scarcely necessary to assert, that if in the laryngoscope we have an important aid in the diagnosis of laryngeal disease, such aid is by no means superfluous or uncalled for. The experience of every-practitioner will enable him to recall cases in which there has existed the most painful doubt as to the nature of disease within the larynx. Mr. Porter, writing in the year 1837, says, "How is a man of experience, when he meets with a case of laryngeal disease, to know whether it is caused by an oedematous condition of the sub-mucous tissue—by a chronic thickening of the mucous membrane itself—by laryngeal ulceration—by destruction of the cartilages—by the presence of abscess or tumor, or by another of those numerous affections which dissection so frequently shows us to be the occasion of death? And he suggests that "perhaps by reason of the difficulty of the subject, it will be long before we possess the same accuracy of information with reference to affections of the windpipe that has been attained in other diseases." What, now, has been the effect of that simple contrivance, the laryngeal mirror? May it not be said without exaggeration that it has rendered the diagnosis of the diseases of the larynx more simple and more certain than the diagnosis of the diseases of any other internal organ? In fact the larynx has ceased to be an internal organ, in the sense of being hidden from view; for it has been brought within the range of vision. And the answer to Mr. Porter's question is simply this, that the man

* Die Laryngoskopie und ihre Verwerthung für die Arztliche Praxis. Von Dr. Friedrich Semelede^{er}. Wien, 1863.

of experience has now only to *look* into the larynx, and he will see what is the form of a disease with which he has to deal.

In my next lecture I propose to give some illustrations of the valuable aid which the laryngoscope is capable of affording in both the diagnosis and the treatment of disease. During the few minutes that remain to-day, I propose to advert very briefly to the subject of rhinoscopy.

Rhinoscopy.

Czermak, in his first publication on the laryngoscope, pointed out that the same method of examination was applicable to the inspection of the posterior surface of the soft palate, the posterior openings of the nasal fossæ, and the superior parts of the pharynx.

In the practice of rhinoscopy the patient should sit erect, without throwing the head back, while the light is thrown into the mouth by the frontal reflector. The tongue is to be kept down by means of a metallic depressor, which may be held either by the operator or by the patient. A small mirror is required, and it is better made of glass than of metal, on account of the rapidity with which a metallic mirror cools and condenses vapor on its surface. I have two circular mirrors, which I find very convenient for rhinoscopy, one the size of a three-penny piece, the other the size of a sixpence.

When you are about to introduce the mirror, the patient should be directed to breathe quietly. A deep inspiration draws the uvula and soft palate upwards and backwards, and so interferes with the examination. The mirror is to be introduced by the side of the uvula, beneath the palate, with its surface directed upwards and forwards. The facility with which the examination can be made depends mainly upon the space which exists between the palate and the posterior wall of the pharynx. When the interval is a moderately wide one, the mirror can be introduced without touching the uvula or palate, and the posterior openings of the nasal fossæ, the turbinated bones, the opening of the Eustachian tube, the septum narium, the roof of the pharynx,—all these parts may be distinctly seen.

In some cases the examination is facilitated by drawing the uvula and palate forwards by means of a blunt hook; but this is better avoided if possible, for it is always attended with much discomfort, and frequently the contact of the hook excites contraction of the palate, which is then drawn upwards and backwards so as completely to obstruct the view. The most successful rhinoscopic examinations that I have made, have been accomplished without touching the uvula and soft palate. Very valuable information may sometimes be obtained by rhinoscopy.

Last year I was consulted by a gentleman, twenty-four years of age, who had complete obstruction of the right nostril. It had commenced two years ago, after a severe cold; and it had steadily increased until, at the end of about a year, it was so complete that he was unable by an effort either to inspire or to expel air through the right nostril. The left nostril remained pervious, but in consequence of the obstruction on the right side the patient habitually kept his mouth open, respiration being impeded when the mouth was shut; and the voice had somewhat of a nasal character. Examination of the nostril in front discovered no obstruction, nor was any abnormal appearance visible on examination of the palate and pharynx in the ordinary way through the open mouth.

He had a throat favorable for rhinoscopy: a small uvula, with the soft palate at some distance from the back of the pharynx, so that the mirror could be introduced without disturbing these parts. The left nasal fossa was quite normal, but the right was seen to be completely obstructed by a tumour, apparently of globular

form, having a slightly granular surface and a yellowish-green color. It touched the floor and septum of the nose; and externally it pressed upon and concealed the turbinated bones. I could touch the tumour with a bent probe introduced behind the palate. I now asked my friend and colleague, Mr. John Wood, to see the patient with me, and to devise a plan for removing the tumour. He introduced a pair of slender curved polypus forceps through the anterior opening of the nostril, grasped the tumour, and as he was drawing it forward there was a sudden rush of a glairy fluid, like white of egg, and some membranous shreds came away between the blades of the forceps. The patient felt immediately that the obstruction was gone. On rhinoscopic examination the tumour had disappeared; the turbinated bones were plainly visible; and on the under side of the middle turbinated bone there was an abraded surface, from which, apparently, the tumour had been torn. The tumour had evidently been a globular cyst-containing fluid. On the second day after the operation a portion of the cyst wall came away. This I have preserved. It is smooth on its inner concave surface, but uneven on its outer surface, by which apparently it had been attached to the mucous membrane. During the first few days after the operation, the abraded surface of the mucous membrane was covered by a purulent secretion; this quickly healed. The patient has lost all sense of obstruction in the nostril; he can breathe comfortably with the mouth closed; and the voice has recovered its natural tone.

The practical value of rhinoscopy in this case can scarcely be called in question. It is doubtful whether by any other mode of examination the position and nature of the tumor could have been determined with sufficient certainty to warrant an operation for its removal. I was relating this case to a friend, who remarked that my patient had more reason to congratulate himself than one about whom he was consulted. One nostril was obstructed, and it was supposed that a polypus was the cause of obstruction. A surgeon had made an unsuccessful attempt to remove the supposed polypus by the forceps; this caused much suffering; and it was at last discovered that the obstruction was due to thickening of the turbinated bones.

Czermak, in the last German edition of his work,* gives a good illustration of the value of rhinoscopy in correcting an erroneous diagnosis. A young man, deaf on the left side, was found to have a tumour at the back of the nostril, which conveyed to the finger the impression of a polypus. An operation was contemplated, but a rhinoscopic examination discovered a tapering swelling of the mucous membrane, nearly as thick as the finger, surrounding the orifice of the left Eustachian tube; also great swelling of the middle and inferior turbinated bones; but no polypus, nor any tumour which an operation could have removed or lessened.

Embolism—Sudden Death.

A woman, aged twenty-seven, was admitted a short time ago under M. Briquet, at the *Charité Hospital* of Paris. She was affected with considerable varicose dilatation of the saphenous vein up to the groin, and improved considerably by rest and an appropriate treatment. The patient looked forward to a speedy discharge from the hospital, when one morning, whilst taking a cup of chocolate, she felt suddenly faint and died in twenty minutes. On a post-mortem examination, a clot was found in the pulmo-

* Der Kehlkopfspiegel und seine Verwertung für Physiologie und Medizin, pp. 127-3. Leipzig, 1863.

nary artery, just at the origin of the division of the vessel. The clot was about five inches (?) in length and completely filled the vessel. It was reddish and hard, and contained coagulated fibrin. From its diameter it seemed to come from the iliac vein. Other portions of the vascular system were found quite normal.

M. Velpeau, recently read before the Academy of Sciences a highly interesting paper "*On Embolism*," taking for text a case of sudden death caused by a like vascular obturation which lately occurred in his wards at the *Charité*: A female, aged forty-six, in good health, was brought into hospital with a comminuted fracture of the right leg. The swelling being considerable, three weeks elapsed before the limb was set, and at the expiration of that period a dextrine bandage was applied. Two days after, whilst talking and laughing merrily with her neighbours in the ward, and without any warning, she shrieked out that she felt herself dying, and before the house-surgeon, who was summoned at once, arrived, she had expired. "It has been observed as an axiom," remarked M. Velpeau, "since the days of Bichat, that the causes of death are traceable to one of three organs—the brain, the heart, and the lung. Which, in this particular instance, was the organ at fault? Not the brain, for sudden death, as M. Flourens has proved, is very rare as emanating from the brain; nor the heart, for even after rupture of this organ, or of its great vessels, death is not immediate, and moreover, in such cases the face is pale, whilst here the features were livid and swollen. The source of death was, therefore, in the lung. This conclusion was verified by the autopsy: A clot was found to occupy the pulmonary artery, the ventricular orifice of which was thereby completely closed. The concretion formed in another part of the body, (in the iliac vein) had traversed the vena-cava, and so gained the heart and become impacted into the arterial channel of the lung, causing stoppage of its circulation and asphyxia. The remains of the original clot were still observable in the iliac vein, and the identity of texture and correspondence of measurements left no doubt as to the fact of the pulmonary clot having been detached from that in the iliac region. "An accident so common," added M. Velpeau, "and one so rapidly fatal, deserves the attention of the scientific community." Although migratory clots may and do occur in the arterial as well as in the venous system, and although in the former case the obliteration of a large trunk and consequent arrest of circulation may lead to the death of the part whose vascular supply is thus cut off, still the real gravity of embolism is confined to those instances in which the concretion exits in the channels leading directly to the right side of the heart and pulmonary vessels. The pulmonary circulation, as suggested by Dr. Ball in his thesis, contains three orders of vessels, each of which may become the seat of embolic concretions; we may find them, therefore, in arteries, capillaries, or veins. After having penetrated into the main artery of the lung, the migratory clot is either arrested by the primary, secondary, or tertiary ramifications or else may pass on into the capillaries. The obstruction appears for the most part as a whitish mass, unconnected with the walls of the vessel in which it lies, and surrounded by the reddish coagulum deposited after its impaction. The character of this subsequent coagulum, its stratification, its extent, its puriform or fatty degeneration, constitute so many elements for speculation upon the date of the embolic migration. The passage of a clot, according to Dr. Ball, from one part of the venous system to the pulmonary ramifications, when not productive of immediate death occasions inflammation of the obstructed vessel, with adhesion of the obstacle to the arterial walls, congestion of the lung, and other consequent pathological modifications, of which gangrene is one

of the gravest. With regard to the constitutional causes which favour embolism, the author mentions—besides anæmia and cachexia, diphtheria; also albuminuria—a condition in which the fibrin of the blood being increased, the chances of spontaneous coagulation are materially augmented; and lastly and chiefly, the puerperal state. The principal symptoms of pulmonary embolism are the sudden appearance of dyspnoea, not to be accounted for by auscultation or percussion, coldness of the surface; and, as M. Velpeau remarks, livid discoloration of the face, together with perfect integrity of the intellectual functions. With regard to the therapeutical measures for the treatment of embolism, medical science is well nigh powerless; but for its prevention, and for the avoidance of all those conditions which are known to favour its production, much may be done; and to the employment of digitalis, Dr. Ball more especially directs attention as the means best calculated to avert the return of symptoms of embolism, should they already once have manifested themselves.

Harvey.

In the year 1559, a Doctor of Medicine of the University of Oxford, named John Geynes, was cited before the Royal College of Physicians of London, for impugning the infallibility of Galen. He was accused of having publicly stated that Galen had erred, whereupon he was required to bring forward the points in which he had discovered the errors, only one month being allowed him to prepare the list. "*Præceptum est Joanni Genesio gratioso alioqui et non impudenti viro, ut scriptu collegio ex hibeat omnia ea Galeni loca (intra mensem unum) quibus cum enasse, et vulgo et apud doctos, ac etiam coram universe collegio in solemnibus comitiis congregato dicere, hominem non predebat.*" Such is the literal record of the fact in the annals of the college.

Dr. Geynes was unable to make out a good case against Galen; and having, by the direction of the president, been summoned through the Sheriff's Court of London either to fulfil the behests of the college or to be conveyed to prison, he clearly understood that he and not Galen had been at fault. Whereupon "he most honestly confessed that he repented of his heresies; that he had proposed futile assertions; that he had not been sufficiently circumspect; that he had not compared the passages of Galen carefully enough; that he had not inquired into his meaning; that he had not understood the sense; that he had not quoted his words faithfully; that he had not shown reverence to Galen, and that he had falsely accused him." Such full confession merited plenary indulgence. The college pardoned the culprit, and ratified the fact by admitting Dr. Geynes to the fellowship in the very next year after the commission of the flagrant delinquency which has just been detailed.

The name of Dr. Geynes is otherwise in no way distinguished from a long list of unremembered Fellows of that body. There is no record of the accusations which Dr. Geynes brought against Galen; possibly we might regard them as futile as they appeared to the college in 1559. We do not know whether he in any way anticipated the great discoveries which in less than a century were endorsed by the same college, and which undermined so much of what, upon the authority of Galen, had been regarded as irrefragable. But it is interesting to see how completely in those days men's minds were under the control of authority—how little the right of private judgment had invaded even the precincts of science. I do not propose to trouble you with an exposition of Galenism in general; but it may not be without instruction, and I trust not without some little interest, for a few moments we examine what was the teaching of the great Pergamenian, in order that the reformation brought about by Harvey, the Luther of Medicine, may stand out

in all the brilliancy that belongs to it, and with which it has illumined, and will ever continue to illumine, the path of genuine inductive science.

Galen bases his doctrine concerning the circulation on the dictum of Hippocrates, that the liver is the root of the veins, as the heart is of the arteries, and that from these organs the blood and the spirit pass to the different parts of the body, and warmth is diffused through them. From both he says that warmth flows through the body. The arteries which are in the heart correspond in size to the vein in the liver; and in the same way as the artery which is given off from the left side of the heart constitutes the trunk of the arteries which occur throughout the living body, so the veins which are spread over the whole body spring from the vena cava, as branches from the trunk of a tree. The arteries which are distributed from the heart to the lung correspond in size to the veins which occupy the stomach, spleen and mesentery, and so on. This may serve as a specimen of Galen's anatomical notions regarding the vessels. I gather from other parts of his works what his views were regarding the functions of the vessels and the blood. The following passage is essentially all that he says upon what we should call the circulation, but concerning which, whatever faint indications may be traced of the doctrine in Galen or his successors now that every tyro has the facts properly propounded to him no one possessed any real knowledge until demonstrated by him who, a hundred years after the condemnation of Dr. Geynes, was called by the College of Physicians "ubique amor et desiderium."

"The mesentery," we find Galen writing, "supports two veins which emerge beneath the liver, and they subsequently are distributed into various parts, and are inserted into the mesentery, by which means, as they are thin, they escape the danger of rupture. They adapt themselves to the bending, and lying like leeches, gaping with an open mouth upon the jejunum, suck up all the aliment which has been converted into juice in it. As soon as they have absorbed, they change into blood what in the jejunum was a liquid. The two veins that have arisen out of many, carry off what they have received from the mesentery by the gates that have already been mentioned. In the liver the food puts on the nature of blood, at the same time the various excrementitious matters are thrown off. Yellow bile is carried to the liver which is attached to it, black bile to the spleen. The food converted into blood is conveyed from the liver to the right side of the heart. From the heart the blood passes by the jugular veins to the upper parts of the body. By the vena cava it is poured through the entire body. From the hollow vein two branches pass, after the blood has been separated from the serum to the kidneys, which lie under the loins towards the hips, and through which the urine transpires." The importance of the liver as the main organ of sanguification and as the source from which the blood springs, is often dwelt upon; all the blood takes its origin from the liver.

Thus, with our present lights all this appears only a monument of human ignorance; and yet, with such an anatomical and physiological nightmare weighing upon them, our learned ancestors who bridged the sick between the second and seventeenth centuries of the Christian Era wrote prescriptions with probably as much, if not more, self-possession and self-confidence as our Todds, Brights, Litchams or Watsons of the present day. The difficulty of reconciling the discrepancies and incongruities that must have prevailed in Galen's mind becomes greater when we find him explaining facts by hypotheses. Thus if you will bear with me and Galen a little longer, the arteries were to him, as you know, vessels that held a spirit or vapor; he assumed a power flowing from the heart to each artery, by which it dilates and contracts; and "because everything that dilates draws to itself from surrounding parts," he concludes "that those arteries which terminate in the skin draw air into themselves, and that those which at some part open to the veins draw the most refined and spirituous part of the blood which they contain to them-

selves." At the same time we meet with the admission that blood does get into the arteries, but, it is supposed, to serve only for the nutrition of the arterial coats. Again we find him speaking of arteriotomy as a means of emptying both veins and arteries, "which cannot well happen, he says "unless the anastomose with one another." Again, the effect of a ligature upon an artery was well known to Galen, for he observes, that if arteries be constituted by a ligature at any part, the part above the ligature nearest the heart is seen to beat as before, while the part that is below is at once deprived of the pulse; it is manifest that this movement proceeds from the heart to the arteries.

Is it not strange that, being so shrewd an observer, he should have allowed his mind to become warped by spurious theories, so as not to penetrate a little farther into the mystery of the circulation? and is it not a still greater enigma, that with Galen's example as a dissector and vivisector and pathologist, the medical fraternities of fifteen centuries should have failed to look for themselves, and should have preferred groping in the murky fog of authority to enjoying the bright light of inductive science?

The period of incubation was indeed a long one. Before the birth there were not the usual phenomena and disturbances which so often indicate the coming event. Together with the "novum organon," the great "exercitatio de motu cordis," which has cast Galenism to the winds, and inaugurated a new phase of the world's growth, sprang from the brain of Harvey like a new Athene, in complete and gorgeous panoply, from the head of Zeus.

The little man, of lowest stature, round-faced, and of olivaster complexion, with the small, round, black eye, full of spirit, and with hair black as the raven's coat—such is the description given us of Harvey—did not arrive at his conclusion without much and hard labor; but of all the works in medical science which embody great and important truths promulgated in them, for the first time, there is none to which in every sense the "terres atque rotundus" of Horace more completely applies than to the "exercitatio de motu cordis." There is a completeness of proof, a certainty of conviction, and an absence of dogmatism in that small volume which, as Dr. Mead truly says, laid the foundation for rational medicine, that it will ever serve as a model to the medical writer, as it will remain a memorial of one of the greatest intellects which has ever lived.

There are few things more grateful to the thoughtful mind than to find an opportunity to dwell upon the achievements of our forefathers, and to pay to them, at fitting times, the debt which we owe, but which in the turmoil of life we but too often overlook and forget. You will the more readily, I believe, acknowledge the deep obligation which we, as men of science, and our fellow men at large, are under to William Harvey, if you will compare, for a moment, the absurd mystification which Dr. Geynes was sworn to believe in, and the broad facts of the circulation which are now known to the first year's student, and which form the very groundwork of our daily practice. Should there be any who have not yet read the *exercitatio*, let me beseech you in justice to yourselves, no less than in justice to him from whom this society takes its name, not to let the week go by without having afforded yourselves the treat that has been too long denied you. Dr. Willis's excellent translation for the Sydenham Society brings it home to us all, and you will not regret the hour you may devote to it.—*Annual Address Delivered to the Harveian Society, by Edward H. Sieveling, M. D.*

Eustachian Tube and Otorrhoea.—Mr. Toyne says that by demonstration with Pouziers's Otorrhoea the Eustachian Tube is only opened during deglutition. He illustrates the fact that air can be forcibly injected into the tympanum by holding the nose and blowing with the mouth shut. This air can only be got rid of by deglutition, which opens the tube and lets it out.

Cholera.

At a meeting of the Harveian Society, Dr. Toulmin, of Brighton, read a paper on the pathology of cholera, with an exposition of the causes which necessarily render medicines inoperative in that disease. He commenced by remarking that, in medicine as in other sciences, dogmas were sometimes received as truths without having been proved to be true, and that this sadly impeded the advancement of knowledge. That in his present inquiry into the phenomena of cholera, he found one of these time-honored beliefs obstruct his progress, and which it became necessary to refute before he could expect his theory of the disease would be honored with the approbation of the Society. The dogma he referred to was, that in all cases death must necessarily ensue on the cessation of respiration or the circulation of the blood. To this he objected to this extent—viz: that where black blood was not being carried to the lungs or brain, death did not necessarily ensue on the cessation of those functions, but that a passive state of existence might continue for many hours, or even days, after these functions had completely ceased. As a proof of this, he instanced the act of fainting (which sometimes was of long continuance), drowning, the hybernation of animals, and more particularly the state of trance, of which he read the curious and interesting case of the Hon. Colonel Townshend as given by Dr. Cheyne. He admitted that life consisted in a never-ending series of phenomena, not one of which could be arrested singly without the consequent death of the individual; but he proposed a case where, in full health, all the functions should be simultaneously suspended—where, although respiration had ceased, no carbonized blood was suffused on the lungs or brain, because the veins had ceased to carry any—where, although the secretion of urine was stopped, still no uremic poisoning ensued, because there was no metamorphosis of tissue going on to produce it; and then asked, what was there in such a case to produce immediate death? Life might be suspended, but not lost; and he contended that in a similar state to this persons continued to exist for a certain time in the collapse of cholera, and were thus frequently buried alive.

He then described cholera as a certain poison, *sui generis*, which was received into the blood, and which attached itself particularly to the serous portion of the fluid; but observed, that however virulent the nature of the poison might be, still all the subsequent phenomena, terminating even with the death of the individual, arose from a series of consecutive causes of the most simple and natural kind, originating in nature's efforts to expel this poison from the system through the medium of the alimentary canal—the rice-water evacuations being, confessedly, nothing more than serum derived from the blood. From these facts he drew the following important deduction—viz: that any attempt to arrest the diarrhoea of cholera was not only futile, but mischievous.

He then observed, that all the subsequent symptoms of the disease might be traced to this one conservative act of nature: as, first, the rapid cooling of the body, which arose from the absolute cessation of all combustion of matter; that this, again, was caused by all metamorphosis of tissue being arrested, which in like manner depended on the sudden coagulation of the blood, as the necessary consequence of the sudden and total loss of all its serum—the very celerity of which cut off all further supply. The absolute cessation of the circulation of the blood, he remarked, was due to this one cause, conjoined to another either of which was equal to the occasion—viz: the shock given to the heart's action at the moment the poison was first received into the system.

The author then remarked, that in such a state as this the patient ceased to be governed by the laws of animal life, and that the attempt to keep him warm, after his own power of generating heat was lost, by wrapping him in blankets, was as unphilosophical as it would be with a marble statue.

As a demonstrative proof of the absolute stagnation of the blood, and that a change of matter depending thereon had ceased, he instanced the state of respiration, the air inspired returning unaltered; the rapid loss of heat, as well as the power of generating it; the arrest of the secretion of urine, as well as of bile, and indeed of all functional activity. As a proof of the latter, he noticed that mercury never produced ptyalism nor opium sleep; that calomel, when given, was found adhering to the living membrane of the stomach unabsorbed; and he believed that in the state of collapse any poison might be given (not acting mechanically) with impunity, until re-action was again established, when its specific effect would for the first time become apparent, to the serious detriment of the patient.

The extreme thirst always attending on cholera he explained as the inevitable consequence of the great loss of fluid in the system; and cramp, as urea deposited among the fibrille of the muscles before combustion had entirely ceased, remaining unabsorbed.

In considering the treatment of the disease, he divided the period of its existence into two stages: the first (and where medical treatment was all-important) extending to the commencement of collapse; the second as being the state of collapse itself, to which alone all his observations had reference, and in which the exhibition of medicine would be as useless as it would be in giving it to an automaton. The author then asked what, pathologically speaking, the system most loudly called for? The answer to which, not only from science, but also from the patient himself, was—*water*, to dilute the crassamentum, and thus re-establish the circulation of the blood, which, when once effected, life was saved. But how, he enquired, was this to be effected when all power of absorption was lost? By the endosmose of tissue, and by this alone. By this function, he observed—which plays so important a part in the animal economy, and, as is well known, is equally active in dead as in living membrane—the fluid swallowed is, in the most direct and simple manner, at once imbibed in its course through the alimentary canal by all the parts requiring it—by the coats of the blood-vessels, the areolar tissue, the abdominal cavities, and the viscera in general; and thus the whole system is supplied with its due degree of moisture, and this without any assistant action on its part. The author pointed out four ways by which water might be imbibed: by the mouth, the skin, the rectum, and by injection into the veins themselves; but only drew the attention of the Society to the first two, which in practice, he observed, he had found all-sufficient. By the mouth, the ardent thirst of the patient called for water icy cold, and in fact his whole time should be employed in sucking ice and drinking water; whilst by wrapping him in the hydropathic wet sheet the whole surface of the skin imbibed water in the most subtle and effective manner. By these means, he observed, he had never seen a case in which re-action had not been established. At the same time he commented on the potency of the remedy, and urged the importance of seizing the golden moment when re-action was established to remove the patient from the wet sheet, and to place him in a room hotter than his blood, or in a warm bed, and then supplying him with some mild stimulant, in the selection of which he would rather be guided by the wish of the patient than his own fancy.

Lithotomy Operations.—Mr. Borlase Childs has performed his thirty-third consecutive case of lithotomy, followed by complete recovery and without the recurrence of any serious symptoms. The only peculiarities in Mr. Childs's mode of operating, are, that he does not injure the bladder, but directs the patient to retain his urine for some time before the operation; and that he incises the bladder to a very small extent, just sufficient to admit of the forefinger being used as a dilator.

OBITUARY.

Surgeon John B. Fontaine.

KILLED, in the line of duty, rendering professional service to General Dunnivant, on the battle-field near Petersburg, October 1st, 1864, Surgeon JOHN B. FONTAINE, Medical Director, Cavalry Corps, Army Northern Virginia, aged 24 years

Few words serve to record this event—but no language can describe the grievous shock to parents and family: to widowed wife and mourning friends who weep around the early grave of our professional brother.

Short, but brilliant has been his career. Graduating at the Medical College of Virginia in 1860, he was among the first to enter the army, and remained in the field, on active duty, until death found him—the chief medical officer of the corps to which he had always been attached—respected, beloved by all.

Knowing his ardent and gallant spirit, it was feared that his valuable life had been lost unnecessarily, for often was he foremost on the scout, eager in the charge, hot in pursuit; but kind Providence spared him for that better moment when in ministering to the wants of a dying soldier, he received a mortal wound.

It has been well said, that man's life should be measured, not by its length, but its breadth. Why then do we mourn the death of our friend? Four years was long enough to prove him the accomplished physician, gallant soldier, true and honorable gentleman. Faithful as a son and brother, devoted husband and fond father, he has worthily run his course, and his spirit wings its upward flight to join the band of martyred heroes who have made the name and fame of their native land immortal.—Ed.

INTERESTING ANALYSES OF ARTICLES IN FOREIGN JOURNALS.

Addison's Disease.—Two specimens of bronzing of the skin and disease of the supra-renal capsules have recently been brought to the notice of the Pathological Society of London: A young woman, aged twenty-three years, was admitted with symptoms of chorea. A month before admission into the hospital, she suddenly fell down and could not rise without assistance. She had no convulsions, paralysis, or loss of consciousness. This was followed by low fever for two weeks. She then stated that she could not use her left hand, nor afterwards her left foot, as before. Choreic movements came on and continued until her admission, at which time they were observed chiefly in the leg, hand and face. She became gradually weaker, and in three days was delirious, getting out of her bed and falling down several times. A certain bronzing of the skin was at first noticed, which was attributed to exposure to the sun, although it was afterwards ascertained that she had not been exposed to the solar rays, as she was of a sedentary occupation, and much confined to the house. She gradually sank, and died nine days after admission. At the autopsy, the supra renal capsules were found to be extensively diseased; in neither was there any traces of their original healthy structure, but the microscope showed them to consist of scrofulous material. The weight of one capsule was five drachms and two grains, whilst that of the other

was two drachms and six grains. On examining the spinal cord, a small tumor was discovered upon its posterior aspect in the lumbar region, springing from the interior of the cord itself. There was an enlargement of the latter higher up, but no farther tumor. The melasma was more marked over the face and arms than elsewhere, and this had been noticed by the patient's friends before death. The brain and other organs were healthy. The case may be looked upon as a true example of Addison's disease, with the accidental complication, if we may so call it, of tumor and enlargement of the spinal marrow, which it is fair to assume gave rise to the nervous symptoms resembling chorea. Excluding the spinal disease, no other change was noticed after death to explain the melasma but the diseased condition of the supra-renal capsules. Differing from the preceding case, the melasma in the following example was in some parts of the body so extreme as to simulate the color of the skin of a moderately dark negro. The specimen of it selected for illustration before the Society seemed a very dark brown, approaching to black. Beyond some slight deposit of tubercle in the apices of both lungs, no parts were found affected but the supra-renal capsules, the case thus constituting a true example of Addison's disease. The patient was a boy of fourteen years, in whom the melasma appeared four months before his entrance into the hospital, previous to which time he had enjoyed excellent health. Pain in the right hypochondriac and umbilical regions was a prominent feature. The parts chiefly affected with melasma were the abdomen and loins, and inner side of both thighs. Generous diet, steel, and other means were unavailingly employed, and a fatal result ensued after a stay in the hospital of about five days. At the autopsy, with the exception of the tubercle at the apices of both lungs, the supra-renal capsules were the only parts found diseased. They were transformed into tuberculous matter, mixed with calcareous particles, and of their normal dimensions. What is remarkable, is the disease running its course, in a mere lad, in the very short space of four months and a half, previous to which the patient had been in very good health. Usually, Addison's disease extends over a much longer period of time.

Sir Benjamin Brodie on Homœopathy.—* * * To a certain extent homœopathy can be productive of no great harm; and indeed, considering it to be no treatment at all, whenever it is a substitute for bad treatment, it must be the better of the two. But there is great harm, nevertheless. There are numerous cases in which spontaneous recovery is out of the question; in which sometimes the life or death of the patient, and at other times the comfort or discomfort of his existence for a long time to come, depends on the prompt application of active and judicious treatment. In such cases homœopathy is neither more nor less than a mischievous absurdity; and I do not hesitate to say that a very large number of persons have fallen victims to the faith which they reposed in it, and to the consequent delay in having recourse to judicious remedies. It is true that it very rarely happens, when any symptoms show themselves which give real alarm to the patient or his friends, that they do not dismiss the homœopathist and send for a regular practitioner; but it may well be that by this time the mischief is done, the case being advanced beyond the reach of art.

It cannot be otherwise than provoking to those who have spent years of the best part of their lives in endeavoring to make themselves well acquainted with disease in the wards of an hospital, to find that there are some who resort to them only when their complaints have assumed a more painful or dangerous character; while they are set aside in ordinary cases, which involve a smaller amount of anxiety and responsibility, in favor of some homœopathic doctor, who probably never studied disease at all. But it cannot be helped. In all times there have been pretenders, who have persuaded a certain part of the public that they have some peculiar knowledge of a royal road to cure, which those of the regular craft have

not. It is homœopathy now; it was something else formerly; and if homœopathy were to be extinguished, there would be something else in its place. The medical profession must be contented to let the thing take its course; and they will best consult their own dignity and the good of the public by saying as little as possible about it. * * * After all, the harm done to the regular profession is not so great as many suppose it to be; a very large proportion of the complaints about which homœopaths are consulted being really no complaints at all, for which a respectable practitioner would scarcely think it right to prescribe.

Diabetes. By W. G. CARTER, M. R. C. P.—I am inclined to the physiological theory inaugurated by M. Bernard, and to ascribe the primary cause of the disease to a deficiency of nervous power from some morbid impression at or about the origin of the pneumogastric nerves. For what are the most common complications and secondary disorders of this complaint? Tubercular phthisis, dyspepsia from increased irritability of the stomach, anasarca, and apoplexy; to which may be added, according to M. Bernard, the increased glucogenic function of the liver by an injury to the medulla in the region of the fourth ventricle. And that it is a disease of the nervous centres, rather than of any secretory or excretory organ, the analogy of it to others which we know to be so, as well as the nature of the malady itself, afford striking if not positive evidence of the correctness of my assumption. The celebrated Dr. Wollaston referred the production and distinction of all the secretions to that change in the quality or intensity of the nervous power transmitted to it; and Dr. Van der Kolk refers all the spasmodic or convulsive movements to the ganglionic cells of the medulla oblongata, which as reflex ganglia, possess the peculiar property, that, when once brought into an excited condition, they may more or less suddenly discharge themselves and communicate their influence to the different nervous filaments just as we see to be the case with electric batteries or in the phenomenon of an electric fish. Moreover, the treatment admitted on all sides to have been most efficacious, offers to my mind a still farther negative evidence of the disease being nervous rather than either humoral or chemical in its character. Dr. Latham frequently prescribed phosphorus with success, and we know what a powerful aphrodisiac that is when there is a deficiency of nervous power. Cullen was so satisfied with this doctrine that we find diabetes ranged in his class neuroses, and ordo spasmi, immediately before hysteria and hydrophobia. Acting under these impressions, I prescribed as a nervous tonic, a pill containing the following ingredients: Sulphate of iron, extract of nux vomica, compound extract of colocynth, and hyosciamus—to be taken night and morning; with a mixture of phosphate of soda and infusion of gentian, twice a day; avoiding as much as possible all vegetables, and recommending a diet of a highly azotised nature. Under this treatment the urine lost its high specific gravity; the thirst became much less; and in a few weeks not the slightest reaction could be obtained by the solution of Barresville, or any other process with which I am acquainted, and the patient recovered his usual health and spirits.

Tetanus of Fourteen Months' Duration.—Mr L— aged thirty-six, a strong fisherman, but with hæmorrhagic tendency, early in December, had a cough of unusual violence. An act of coughing suddenly ceased, and the head was at the same time spasmodically thrown backwards, with great pain in the neck. Complete tetanus gradually developed itself in every form, and lasted, with such intermissions as were evidently the effect of remedies, till the middle of January of the second year afterwards. Treatment of every kind was tried. The prolongation of life seemed to be due to the free breathing of chloroform and the constant use of morphia both by the mouth and by injection under the skin. A small clot was found on the front of the cervical part of the spinal cord.—*Lancet.*

Tobacco.—Recently at a meeting of the Society of Emulation at Rouen, a paper was read by Dr. Dumesnil on Tobacco and the effects attending its use, of which the following is an abstract: "The custom of smoking is spreading through the whole world. The tobacco-producing countries having the greatest difficulty in providing for local wants. In America, the consumption augments more rapidly than the supply. According to late statistics, the quantity of tobacco used in the New World annually, is in weight equal to the bread consumed by ten millions of individuals in England. England, a country which does not consume tobacco, yearly consumes 36,000 000 lbs. of that plant drawn from America; and during the last ten years her consumption has increased one-fourth. In Hamburg, the population of which is only 150,000, as many as 40,000 cigars are consumed per day. In Denmark, the average annual consumption is 4 lbs. per head for the whole population. In Holland the proportion is still higher. In Austria, the cultivation of the tobacco plant occupies 100,000 acres of good land. In 1854, the consumption of tobacco in the whole world amounted to 506,000,000 lbs., being an average of 9 oz. per each person. Calculating that tobacco contains on an average 3 per cent. of nicotine, it will be seen that there are annually consumed on the globe 15,180 000 lbs. of a poison of which a few drops are sufficient to cause death."

Case of Double Uterus with Simultaneous Gestation.—Mr Grace was summoned to see a patient in labor for the fourth time, aged twenty-six. Twice previously there had been premature birth; the third child did not live. When first seen by Mr. Grace, labor had been going on for fifteen hours; the waters had escaped. On examination, a head was found presenting in the vagina, and the os about half dilated; but lying posterior to this, another os was discovered, with the head of a child presenting septum between the two half an inch thick, and extending up as far as could be reached. The anterior os was dilated, the child turned, and delivery effected. The placenta then followed. The child was dead, and apparently seven months old. The posterior os was next dilated, turning effected, and a live child extracted, which survived only a few hours. The placenta of the second child was expelled without difficulty. Both children were females, equal in development. No flooding or other complication interfered with the perfect recovery of the patient.

In the elaborate work of Kuamari on the Malformations of the Uterus, which contains a large collection of cases of various kinds, there are only two recorded precisely similar to this. Abortion and premature labor seem especially liable to occur in cases of double uterus.

Nicotine found in the Viscera of a Snuff-Taker.—M. Morin, of Rouen, anxious to ascertain whether nicotine could be detected in the viscera, subjected the lungs and liver of a snuff-taker, who had died at seventy, to a careful analysis, and found the alkaloid just mentioned. Portions of the lungs and liver were reduced to a pulp and soaked in distilled water, slightly acidulated for the lungs with sulphuric acid, and for the liver with oxalic acid. Several days afterwards, the liquor was filtered through paper free from carbonate of lime, then concentrated to a third of its volume, and filtered again to free it from the flakes which had formed. It was now once more evaporated and treated with pure alcohol, when fresh flakes formed. The alcohol was then removed by heat after filtration. The residue was mixed with a small quantity of pure potash. On cooling, sulphuric ether was added, and, after a few hours, the decanted liquor was evaporated in vacuo. The substance now obtained having the smell and the acid taste of nicotine, was treated by the bichloride of mercury, chloride of platinum, tannin, biniodide of potassium, the salts of copper and lead, and with all were the reactions of nicotine obtained.

ARMY MEDICAL INTELLIGENCE—OFFICIAL.

PRINCIPAL HOSPITALS IN THE CONFEDERATE STATES.

[CONCLUDED]

SOUTH CAROLINA.

Hospital.	Location.	Surgeon in Charge.
Ladies' Gen'l. No. 3.	Columbia.	R. H. Edmonds.
General, No. 1.	"	W. C. Horlbeck.
Second N. Carolina.	"	A. W. Thomson.
Way.	Kingsville.	J. A. Pleasants.
Third N. Carolina.	Charleston.	T. B. Memminger.
First S. Carolina.	"	G. R. C. Todd.
First Louisiana.	"	R. Leiby.
General.	Georgetown.	B. C. Fishburne.
First Georgia.	Charleston.	N. H. Cumming.
Soldiers' Relief.	"	W. H. Huger.
Way.	Florence.	T. A. Dargan.
"	Greenville.	G. S. Trezevant.

GEORGIA.

Erwin.	Barnesville.	J. A. Groves.
Way.	Fort Gaines.	E. W. McCreery.
General, No. 1.	Savannah.	W. G. Bulloch.
" " 2.	"	W. R. Waring.
"	Columbus.	J. S. White.
Third Georgia.	Augusta.	J. F. McGeddings.
Hardee.	Forsyth.	Wm. Webb.
Clayton.	"	Jno. Patterson.
General.	Guyton.	W. S. Lawton.
Lumpkin.	Covington.	E. McDonald.
Asylum.	Madison.	H. H. Clayton.
Kingston.	Kingston.	G. W. McDade.
Polk.	Atlanta.	R. Battey.
Bragg.	Newnan.	J. Gore.
Foard.	"	J. N. Hughes.
Buckner.	"	W. T. McAllister.
Cannon.	La Grange.	L. W. Tuttle.
St. Mary's.	"	J. M. Henson.
Laf.	"	A. Eskine.
Oliver.	"	J. Williams.
Hed.	Covington.	D. H. Morrison.
Dawson.	Greensboro'.	J. D. Smith.
Gilmer.	Marietta.	P. H. Oley.
Academy.	"	F. Hawthorne.
Foard.	"	J. B. Barnett.
Bell.	Greensboro'.	H. V. Miller.
Blackie.	Madison.	J. T. M. Law.
Prin.	Griffin.	L. C. P. ncham.
Director.	"	R. M. Lytle.
Quintard.	"	Asst. Surg. S. V. D. Hill.
Stout.	Madison.	J. W. Glenn.
Newsom.	Thomaston.	A. Hunter.
Fair Ground, No. 1.	near Macon.	G. G. Crawford.
" " 2.	"	H. W. Brown.
Empire.	"	W. P. Harden.
Grant.	"	J. C. Mullens.
Institute.	"	D. C. O. Keefe.
Hill.	Covington.	W. H. Robertson.
Ocmulgee.	Macon.	S. E. Caldwell.
City Hall.	"	L. L. Sanders.
Blind School.	"	Geo. F. Cooper.
Floyd House.	"	E. J. Reich.
Catoosa.	Griffin.	C. L. Herbert.
Medical College.	near Macon.	W. F. Westmoreland.
First Florida.	Fort Gaines.	J. F. M. Garton.
Rid.	West Point.	J. W. Olin.
Gamble.	Newnan.	K. C. Devine.
Marshall.	Columbus.	T. A. Means.
Stout.	Macon.	I. Parker.
Lee.	Columbus.	W. A. Robertson.

ALABAMA.

Nott.	Mobile.	G. A. Nott.
General.	"	W. C. Cavanaugh.
"	Greenville.	Asst. Surg. R. B. Maury.
Way.	Demopolis.	H. Hinckley.

Hospital.	Location.	Surgeon in Charge.
General.	Tuscaloosa.	R. N. Anderson.
"	Selma.	A. Hart.
Way.	Talladega.	G. S. Bryant.
General.	Spring Hill.	G. Owen.
" (Ross).	Mobile.	S. L. Nidelet.
Way.	Selma.	W. Curry.
Ladies'.	Montgomery.	T. F. Duncan.
Stonevill.	"	W. M. Cole.
Way.	Eufaula.	P. D. L. Baker.
General, (Canty).	Mobile.	W. Henderson.
" (Levant).	"	R. H. Redwood.
Madison House.	Montgomery.	C. J. Clark.
Texas.	Auburn.	Asst. Surg. L. A. Bryan.
St. Mary's.	Montgomery.	J. H. Watters.
General.	Notasulga.	U. R. Jones.
Concert Hall.	Montgomery.	W. J. Holt.
Watts.	"	F. M. Hereford.
Officers'.	Uniontown.	G. C. Gray.
General.	Shelby Springs.	B. H. Thomas.

MISSISSIPPI.

General.	Grenada.	J. L. Thompson.
Way.	Guntown.	J. M. Hoyle.
	Liberty.	R. L. Luckett.

FLORIDA.

General.	Quincy.	J. H. Thompson.
"	Tallahassee.	E. G. ddings.
"	Lake City.	J. S. M. rel.
Way.	Madison.	Asst. Surg. J. Cohen.

TENNESSEE.

General.	Bristol.	R. D. Hamilton.
Hood.	"	Asst. Surg. J. T. Love.

MEDICAL LABORATORIES.

Surgeon A. S. Pigott.	In charge at Lincolnton, North Carolina.
" R. M. J. hudson.	In charge at Tyler, Texas.
" W. H. Prior.	In charge at Macon, Georgia.
" G. L. Blackie.	In charge at Augusta, Georgia.
" J. J. Caisolm.	In charge at Columbia, S. C.

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ORIGINAL COMMUNICATIONS.

ART. I—*The Effects of the Hunterian Method of Ligation on Inflammation.*—By DANIEL F. WRIGHT, Surgeon P. A. C. S.

The observations which I have to make upon the following cases have been mainly suggested by some remarks contained in the third chapter of the Manual of Military Surgery, prepared for the use of the Confederate States Army, by order of the Surgeon-General.

I presume that I am violating no confidence in attributing these remarks to my old and esteemed friend, Surgeon Henry F. Campbell, formerly Professor of Anatomy in the Medical Department of the University of Georgia; they relate to "the incidental benefit obtained" by tying the artery above the seat of lesion, as advised by Hunter in preference to Mr. Guthrie's method of ligating in the wound. "The idea pursued," he adds, "in departing from the rule (Guthrie's) was no less than the experimental effort to cure the inflammation in the limb, by cutting off its arterial supply by ligation of the main trunk, which supported that inflammation."

The therapeutic indications aimed at and obtained in three cases specified were—1st, the reduction of excessive œdema; 2d, the amelioration of discharges which changed from sero-sanguinolent to purulent; 3d, the rapid promotion of granulation and cicatrization; and, 4th, in one case the arrest of destructive gangrene. These results are represented to have followed so promptly upon the operation, that with a high degree of probability we are justified in inferring that the ligation was the cause of the improvement. At least a *prima facie* case is abundantly established for further observation, and having been recently placed in a position where the ligation of arteries was frequently called for by the occurrence of secondary hemorrhage, I considered it my duty to notice carefully the changes in the condition of gunshot wounds, subsequent to the ligation of the arteries supplying the part, and to report the results, if they should be such as to throw any light upon the question proposed for consideration. They have in every instance been so entirely in accordance with those obtained in the experiments of Surgeon Campbell, that I cannot feel myself justified in withholding them from publication.

[For the history of the two first I am indebted to Dr. O'Leary, the main incidents having transpired before I was placed in charge of the Division.]

Case First—Winder Hospital, Second Division.—(Service of Assistant-Surgeon O'Leary.)

R. W. Bullet, company "H," Twenty-Second North Carolina regiment; admitted May 24, 1864; wounded May 23, at Hanover Junction. Gunshot wound right foot—point of entrance below internal malleolus, exit at posterior border of *os calcis*. Patient reports that he bled profusely on the field; slight hemorrhage occurred shortly after admission. June 3d—Profuse hemorrhage from the wound; *wound had been cauterized on account of incipient gangrene, and was very unhealthy in appearance*; artery ligated at the seat of injury, and some spiculæ of bone which were exposed by the incision removed from the wound. The appearance of the wound commenced improving from this time. July 3d—Treatment suspended, the wound being healed. July 23d—An abscess in the heel was opened and the man furloughed.

Case Second.—Private C. O. Ward, company "G," Sixty-Sixth North Carolina regiment, aged twenty-five. Admitted July 1st, 1864. (Service of Assistant-Surgeon O'Leary.)

Gunshot wound by Minie ball through middle of left hand, fracturing the metacarpal bones of middle and ring finger. June 30—Wound received. July 10—Sloughing and hemorrhage from the palmar arch by plugging the wound with lint saturated with sol. persulph. ferri.; bandaging and elevation of the arm; *sloughing continued and unhealthy action of the wound increased till July 16*—Hemorrhage recurred; compression of radial and ulnar artery failed to arrest it; ligation of brachial artery; condition of the wound commenced improving. July 26—Slight hemorrhage, arrested by cold applications, elevating and bandaging the arm above the elbow. August 1—Abscess on palm opened; spiculæ removed; ordered tinc. ferri. chlor., gutt xx ter quotidie. Aug. 25—Ligature came away. Sept. 6—Furloughed; had servicable motion of thumb, index and little finger.

The following cases occurred under my own observation:

Case Third.—Private M. Check, company "I," Sixty-First North Carolina regiment. (Service of Assistant-Surgeon Muldro.)

Flesh wound, with Minie ball entering at about the centre of rectus femoris, exit at the antero interior border of vastus internus, (just over the tract of the femoral artery at lower third of the thigh.) July 30—Wound received at two, P. M. August 3—Profuse hemorrhage from the wound about nine, A. M. My attention was first called to this wound this morning, shortly after the hemorrhage had been checked by Assistant-Surgeon Muldro, by applying a compress firmly over the wound. I determined to leave these dressings on till three, P. M., with but faint hope of their permanently controlling the hemorrhage, as there was every reason to suppose that the hemorrhage came from the femoral artery. At three, P. M., I first applied the tourniquet over the track of the femoral, just above where it crosses the *sartorius* muscle, and then removed the dressings. The condition of the wound was very unhealthy, the edges ragged and apparently sloughing, the tissues discolored and the cavity filled with a dark-colored fetid fluid, the characteristic smell of gangrene exhaling as soon as the wound was uncovered. No pulsation could be felt in the wound or along the track of the femoral, from the wound upwards to the point pressed upon by the tourniquet. I now ordered the tourniquet to be gradually relaxed, and finally taken off, while I watched the results in the wound. No renewal of hemorrhage occurred, though I waited several minutes; again felt along the arterial track, and found that no pulsation could be felt even in the groin, while, on the uninjured side, pulsation was easily felt all along the track, and in the groin very vigorous. Obliteration of the artery for so long a space being very unlikely, the only other supposition was that circulation was suppressed by contraction of the arterial muscular coats. As this could not be calculated upon as permanent, I determined to ligate above the point where the artery divides. That I might see my way thoroughly in this rather problematical condition of things, I made an incision extending down to the wound from a point about three inches above it. (The wound of exit being the one immediately over the artery, of course, was the one selected.) For two inches of this length and throughout the extent of the wound itself the incision was carried down to the artery; in the wound the artery had been torn entirely asunder by the missile; the connective tissue throughout had been so completely destroyed by the diseased action, since the injury, that the artery, from its point of division to that selected for ligation, about an inch and a half in length, was separated from surrounding tissues, vessels, nerves, &c., by the fingers alone, without the use of the scalpel. The artery, then, was ligated one inch and a half above the point at which the ball had divided it; the wound was not closed at all, either by sutures or adhesive straps, as the discharges from the wound were at that time so unhealthy that it was deemed that a free escape for them was a more important object than the bringing in apposition parts which in that condition could not unite. My prognosis in the case was far from sanguine. August 4—Fetid discharges diminished; discolored patches disappeared. Aug. 5—Discharge disappeared, wound clean, slight granulations in incision. August 6—Healthy pus discharged; granulations evidently in progress; pulse and

general appearance much improved. August 7—Pulsation perceptible in the groin for the first time since the day of operation * * * * * Aug. 13—Ligature came away, the wound entirely filled up with granulations, and cicatrization rapidly advancing. The patient was furloughed about two weeks afterwards, entirely cured.

Deferring for the present any remarks bearing upon the general purport of this paper, I would call attention to the extent over which contraction of the arterial coats took place during the intervals of hemorrhage. I omitted to state that the man reports himself to have fainted from profuse hemorrhage upon the field, as may well be supposed when so large a trunk was divided; nevertheless, the spontaneous contraction of the artery preserved him from further hemorrhage till four days afterwards, (Aug. 3;) and again, after this second hemorrhage had been arrested, the contraction was resumed and extended so far upwards that pulsation could not be felt in the groin—this condition persisting also for four days, (till August 7,) at which time beyond a doubt hemorrhage would have recurred, had not the ligature been applied. A curious instance of the rythmical or periodic type of all intermittent action.

Case Fourth.—Sergeant P. Broom, company "A," Forty-Eighth North Carolina regiment. (Service of Assistant-Surgeon Bagnall.)

The missile which had been shot away by a Minie ball on the 26th of August. I have not been able to ascertain the exact amount of injury, as amputation had been performed on the field by Surgeon Montgomery, the operation including the excision of the head and some portion of the shaft of the metacarpal bone. As far as I could judge by the appearance of the stump the operation had been skillfully performed. The patient was admitted on the evening of August 26th. The wound upon the whole looked well, except that the incised surfaces were rather dryer than usual in such cases. August 29—Secondary hemorrhage occurred, which was controlled by forcibly flexing the forearm on the humerus, and forcibly retaining it in that position by bandages. Aug. 30—Hemorrhage recurred in the morning; it was temporarily controlled by pressure on the radial and ulnar artery in the wrist, and then the same treatment adopted on the day before; hemorrhage, however, recurred in the afternoon, when ligation was resolved upon. As the bleeding was evidently from the palmar arch, and therefore fed by all three of the main arteries of the forearm, it was concluded to ligate the brachial artery at the lowest point easily accessible. Previously to this, however, the wound was opened. It was found to be filled with a recent coagulum, and when this was removed, there was seen to be a complete absence of all reparative process, either by granulation or adhesion, and a considerable portion of the ulnar lip was affected by dry gangrene, which extended deep into the interior of the divided tissues. The ligature was then applied and the wound closed again. Sept. 2—Some suppuration had commenced, and the lips of the wound looked much healthier. Sept. 3—Suppuration increased. Sept. 4—Phlogmonous erysipelas attacked the arm

above the seat of ligation, the progress of which was very rapid, soon producing extensive sloughing of the integuments. The patient was now removed to the tents set apart for the treatment of gangrene and erysipelas, which were not under my charge, and I was unable to see him so frequently as before, but under the judicious treatment of Assistant-Surgeon Meek, the sloughing process was gradually arrested, and (Sept. 18) ligature separated. Sept. 20—All the injured parts are rapidly improving, the integuments in the process of reproduction, and the original wound more than half repaired.

These are all the cases which have occurred under my cognizance since entering upon my present duties, in which the condition of the wound previously to ligation was in such a condition as to fully test the question.

The results will be seen at a glance to be in full accordance with those observed by Surgeon Campbell. Tumefaction, the absence of healthy and presence of unhealthy discharges, arrest of the plastic processes essential to reparation, have, immediately upon the performance of ligation, been superseded by general amelioration in all cases; healthy suppuration, active granulation and spontaneous adhesion of apposed surfaces have rapidly issued in the healing of the wounds, except in the last case, in which the reparative process was indeed commenced, but arrested by the intercurrent erysipelas.

In none of these cases was ligation resorted to with the direct purpose of reversing the morbid action; but while it was adopted for the purpose, in each case, of arresting hemorrhage, its influence upon the pathological condition of the injured case was so marked in promoting the desired reparative action, that I cannot but conclude that a case is fairly established for resorting to it for its direct beneficial effects, apart from the necessity of checking the bleeding which frequently occurs in wounds of the morbid character described. The first ligation of a large artery, not necessitated by hemorrhage, will be a bold experiment, but if the occasion be well chosen I think that the results will justify the daring, and the expedient will become an established procedure in surgical art.

ART. II.—*The Climate and Topography of Aiken, South Carolina, in their Relation to Phthisis.* By E. S. GAILLARD, Surgeon and Medical Inspector.

As our ports are all comparatively blockaded, and egress is inhumanly denied to the invalid, it is proper that the profession should meet such an emergency as satisfactorily as it has done many others which have arisen during the progress of this war.

Phthisis, that disease over which science mourns, because of her inability to afford relief, claims its victims as remorselessly now, as it has ever done, in times past. The hecatombs that have been annually sacrificed upon the altar of this insatiable Moloch are sadly increased by the incidents and exposures of the field.

In the treatment of this disease, all well-informed physicians of the present day appreciate the wisdom of the Thane

of Cawdor, in the well known injunction to his professional adviser, and seek in the obscure, yet magic influences of climate, that balmy elixir which Pharmacy has, so far, failed to reveal.

Until comparatively recent years, the influences and adaptation of climate and topography, in their relations to Phthisis, have never received the adequate investigation of competent observers. Patients have been sent indifferently and indiscriminately to the dry, cold atmosphere of Spitzbergen, or to the warm, moist air of Bermuda and Jamaica; to the temperate climate of Madeira, Florida and the Mediterranean, or to the dry and warm atmosphere of Cairo and Sierra Leone.

Independently of the trying circumstances with which war has surrounded us, it is well that this subject should receive thorough attention, but now, that the consumptive is barbarously denied access to his usual resorts, it is especially necessary that some proper and appropriate provision be made for his physical welfare.

It is on this account that the climate and topography of Aiken, South Carolina, are brought to the attention and consideration of the profession.

Aiken is situated in the Northwestern part of Barnwell District, South Carolina, and quite near the dividing line, between Barnwell and Edgefield Districts—more accurately described, its latitude is $33^{\circ} 32'$ North, and its longitude $81^{\circ} 34'$ West.

It is situated on the South Carolina Railroad, one hundred and twenty miles from Charleston, S. C., and sixteen miles from Augusta, Georgia.

The village is built near the centre of an elevated plateau, or table land, possessing an area of about twenty square miles. The elevation of this plateau is 565 feet above the level of the sea, and about 300 feet above the Savannah river, at its nearest point.

The country immediately adjacent is drained by Shaw's creek and Horse creek, with several smaller streams, emptying some into the Savannah, and some into the Edisto river; this drainage is thorough and complete.

The character of the soil is sandy, with a subsoil of red clay; the stratum of superficial soil being from six to ten feet deep, unless at the immediate site of the village, where the substratum of clay crops out. The sand is of the white variety, silex entering largely into its composition. This soil is exceedingly dry, water not being found at a less distance than from eighty to one hundred and twenty-five feet below the surface.

The water is of a superior character, being transparently clear, with a temperature varying from 62° to 65° Fahrenheit; it is generally impregnated with the Salts of Iron and Magnesia, but not sufficiently so to affect its taste or to render it deleterious to the invalid.

The annual rain fall at this point, as tested by the rain-gauge, is usually, about thirty-seven inches, or a monthly average of three inches; the heaviest uniform fall being in the months of June, July and August, and the smallest fall in Autumn.

The earliest frost usually occurs from the 10th to the 15th of November, and the latest from the 1st to the 10th of April; the average duration of the period without frost being from two hundred to two hundred and twenty-five days; or about two-thirds of the year. This fact is deserving of special attention.

The mean annual temperature is from 50° to 54° Fahrenheit; the mean temperature of the Winter months being from 42° to 46° F.; that of the Spring months 58° F.; that of the Summer months 77° F., and that of Autumn 62° F. Attention is directed to the very gradual and equable variation in these temperatures, there being a marked absence of sudden changes, and the variations in temperature being strictly in accordance with the respective seasons.

The extremes in temperature for one year (which is a fair type of the seasons of other years) are as follows: January, 60°—40° Fahrenheit; February, 76°—33° F.; March, 82°—24° F.; April, 73°—28° F.; May, 86°—50° F.; June, 92°—66° F.; July, 86°—64° F.; August, 92°—69° F.; September, 90°—53° F.; October, 78°—40° F.; November, 83°—19° F.; December, 74°—31° F.

The prevailing winds are from the South and Southwest.

The dew point is invariably low. This hygrometrical condition of the atmosphere is here characteristic. The ordinary long moss (*Tilandsia*) of the Gulf States, as has been frequently tried by experiment, will not grow here. The Cryptogamous plants are feebly represented, and those only grow that are usually found flourishing in dry atmospheres. Very few lichens are to be seen; on the tops of the highest and driest hills a few specimens are to be found. The grape flourishes in great profusion and abundance, and it is very unusual for the atmosphere to be sufficiently damp to cause any injury to this delicate fruit.

The forest growth is of the dwarf oak and the yellow pine; the atmosphere is decidedly terobinthinat.

Endemics are unknown here, and epidemics rare. The country is entirely free from malarial diseases.

This village, for a series of years has been the resort of consumptives from many sections of the United States, and their testimony, in regard to the climate, is very satisfactory.

The difference in this climate and that of the seaboard is so marked that many persons suffering from pulmonary trouble have, after residing at Aiken, been unable, with impunity, to return to their homes upon the coast.

The climate and water, together, have produced very conspicuous results in the health of those suffering from gastric and intestinal complications.

Having thus given these physical and meteorological facts, it is proper that a few reasons should be furnished for considering this village as peculiarly adapted for the home or retreat of the consumptive.

Bernard, Ingenhouze, Cruikshank and others have satisfactorily demonstrated the important fact that the skin is, physiologically, the chief supplement in respiration. Becquerel, Rodier, Todd, and other observers, have shown that this supplementary action of the skin is peculiarly and vitally important in Phthisis; corroborating views, long since ex-

pressed by Laennec, and a few years since interestingly brought to the notice of the profession by Dr. Lée, of London.

Sir James Clark, Ancell and others similarly interested, have demonstrated the interesting truth that the supplementary action of the skin is in a direct ratio with the hygrometric condition of the atmosphere. Edwards has confirmed these experiments, and states that in a moist atmosphere, the supplementary action of the skin is at its minimum. (Lee.)

Phillips, Tulloch and Forry testify that it is not only true that the action of the skin is least in moist atmospheres, but that this fact is usually manifested, irrespective of atmospheric temperature.

Interesting tables have been prepared by Fourcault, and also by Ancell, showing that where dryness of atmosphere exists, irrespective of temperature, there is a marked increase in cutaneous transpiration, and that where this condition is found, Phthisis is seldom observed.

It is a familiar fact with the profession that in the dry and hot atmospheres of the Cape of Good Hope, Egypt and Sierra Leone, Phthisis is exceedingly rare; that it is equally rare in the temperate air of Australia, the Mediterranean coast, Madeira, Florida and the slopes of the Pacific, whilst in the dry, cold regions of Iceland, Greenland, Sweden, etc., this disease is comparatively unknown.

The happy effect of dry atmospheres are conspicuously manifested in the south of Spain, France and Italy, (in sections of these countries unvisited by the Mistral, found so frequently prevailing,) and throughout the entire extent of this isothermal line of Humboldt.

Dr. Hay, who accompanied Kane's Arctic Expedition, states that among the Esquimaux tuberculosis and all forms of scrofula were unknown.

It will be observed, that at all of these places, dryness is the prevailing and distinguishing characteristic of the atmosphere.

In direct contrast with these facts, it is well known to all who have investigated this subject, that moist atmospheres, irrespective of temperature, have usually a baneful effect in most cases of Phthisis; this is especially true in those cases representing the second and third stages of the disease. The statistics of Nova Scotia, Holland, England and Jamaica have long since demonstrated this truth.

In analyzing the oral and written testimony with reference to Phthisis, in its relation to climate and topography, the whole subject resolves itself into a few well marked and easily recognized divisions.

There is the dry and cold climate which is usually both prophylactic and curative in its influences. Spitzbergen, Sweden, and Minnesota, etc., may be accepted as representatives of this class.

The dry and temperate climate found on the Pacific slopes, in Middle Florida, at Aiken, South Carolina, Boulogne, Nice, St. Remo, Dieppe and Southern Spain. This air is also prophylactic and curative, and is especially adapted to the largest class of cases observed.

The dry and warm climate, as found at Hyeres, Menton,

Naples, etc.; the only practical difference between this air and that to which allusion has last been made, is that a dry and warm atmosphere is frequently found to be too exciting.

The dry and hot climate peculiar to Cairo, Algiers and Sierra Leone. This air is desirable where stimulation is required and is well borne.

The moist and cold climate; that of Wales, Scotland, Nova Scotia and New England; provocative of the disease and prejudicial in its influences.

The moist and temperate climate, as found on the Isle of Wight, at Paw, Pisa and Eastern Florida, and in Holland. This air is beneficial, though not in so marked a degree as that which is dry and temperate; it is not so often applicable.

The moist and warm climate: Bermuda, Jamaica, Madeira and Sicily.

The moist and hot climate, as found in Cuba and most of the West India Islands. The air at most of the localities specified in the two last divisions is usually beneficial in incipient cases of Phthisis, but is almost invariably baneful, if not fatal, to those in the last stages of the disease.

It will be observed, in this summary, that no air is more frequently appropriate and beneficial than that of Aiken, South Carolina, resembling, as it does, that of Nice and St. Remo, which are regarded at the present time with more favor, perhaps, than any other sections of Europe.

The elevation of the country at and around Aiken is also a material advantage to consumptives, as it is a well known fact that respiration, in its depth and volume, is in a direct ratio with atmospheric agitation. Edwards and others have made several interesting experiments for the establishment of this truth. (Lee.)

Aiken possesses another great virtue in the important fact that the consumptive residing there can, with impunity, exercise in the open air, throughout the year. M. M. Lombard, L'Espine, Dujat and others have made interesting tables, showing the disastrous results invariably ensuing, when consumptives reside in those sections, requiring prolonged residence within doors. The researches of these observers corroborate the position, first advanced by M. Cavriere, that hybernation and mortality in Phthisis are in a direct ratio. The soil at this place is particularly well adapted for safe exercise throughout the winter.

The important physiological fact being accepted, that the skin is, in its action, supplementary to the lungs, that there is, so to speak, a cutaneous, as well as a pulmonic respiration, it is evident, when, from disease, there is a deficiency or inefficiency in the action of the lungs, that it is vitally necessary to develop and stimulate the functions of the skin. Nothing so happily or successfully accomplishes this object as residence and active exercise in a dry, equable and temperate climate. It should be remembered that the beneficial effect of climate, in arresting cases of consumption, is particularly successful, in proportion as the disease is in its incipient stage.

There are eligible spots in and around this village which can be advantageously purchased, and the facilities for build-

ing are all that could be desired. The soil is especially adapted to gardening and horticulture, and with very little care, an abundant supply of vegetables, and very superior fruit may be obtained. The grape and peach orchards in this vicinity are especially rich and valuable.

The distinguishing characteristics of the Aiken climate then, are its peculiar dryness of the atmosphere, its temperate and equable temperature, its freedom from sudden and violent atmospheric changes, an absence of frost for two-thirds of the year, its freedom from endemics and malarial diseases, and the general prevalence of soft Southern and Southwesterly breezes.

These important and interesting facts in regard to this locality, in connection with its dry and porous soil, rendering exercise at all times practicable; its excellent water and abundant fruit; cheerful and refined society; its remarkable elevation; its facility of access and removal from all crowded centres of population, with their irregular hours and inseparable excitements, render Aiken especially adapted for the home of the consumptive.

ART. III.—*Report of Forty-Eight Cases of Hospital Gangrene and Hospital Erysipelas Treated in General Hospital, Division No. 1, Charlottesville, Va., from June 1st, 1864 to 1st October, 1864.* By Acting Assistant Surgeon C. R. HARRIS, in charge of Gangrene and Erysipelas Ward.

The gangrene and erysipelas wards in this hospital are a series of well-arranged cloth tents, and are admirably adapted for the important purposes of isolation and aëriation.

These diseases are the great scourges of all armies and hospitals. The publication of interesting cases, with their treatment and results, is an imperative duty incumbent upon every member of the medical staff.

We shall therefore present a classified tabular statement or record of cases under treatment, with accompanying results, which we hope may prove of more than ordinary clinical interest to the profession:

Total number of cases received in ward from 1st June to 1st October,		48
Simple cutaneous erysipelas (traumatic),	-	6
Traumatic phlegmonous erysipelas,	-	9
Hospital gangrene (traumatic), unaaccompanied with erysipelas,	-	6
Hospital gangrene complicated with traumatic erysipelas phlegmonodes,	-	25
Idiopathic cutaneous erysipelas, with diarrhœa acute,	-	1
Idiopathic cutaneous erysipelas, with chronic diarrhœa,	-	1
Total,		48
Recovered,	-	41
Died,	-	7
		48

Of the forty-one cases which recovered, there were eight wounded in and near the elbow joints, upon three of whom the operation of resection was performed. One was wounded at the knee joint, at the same time involving both knee and elbow joints, by a fragment of shell. Three cases of ankle joint and three cases of wrist joints by Minie balls, and one upon whom resection was performed on the ulna for three inches. Total, seventeen cases, involving the important joints of the extremities, all of whom recovered with partial or complete ankylosis, making a total of seventeen cases, one-third of the total number wounded; all of whom were also attacked with either gangrene alone, or complicated with erysipelas phlegmonodes.

Of the seven fatal cases not one died with or from hospital gangrene or erysipelas. Two had compound comminuted fracture of shaft of tibia, in one of whom there was resection of tibia for three inches. They had recovered from gangrene and erysipelas, and the wounds at the seat of fracture were doing well, with a laudable secretion of pus, when they died of puruloid infection or pyæmia. In one there was compound comminuted fracture of humerus at upper third, who, after complete subsidence of gangrene and erysipelas, died of pyæmia, the wound and surrounding tissues looking perfectly healthy. One of the cases, after fully recovering from erysipelas and hospital gangrene, died with his second attack of cholera morbus. The fifth case of strumous habit, and with an enfeebled constitution for years, died of chronic dyspepsia, with anorexia and consequent inanition. The sixth case died of pyæmia—from v. s. of upper third of humerus—producing a severe compound comminuted fracture, involving at the same time the scapula. Several fragments of bone were removed. The wound looked well, and the erysipelatous inflammation had subsided for some time prior to the manifestations of any of the symptoms of puruloid infection. The seventh and last case died also of pyæmia complicated at first with traumatic pneumonia, the result of gun-shot wound of apex of lung and scapula, after the entrance and exit wounds were looking entirely healthy, and the phagedæna having subsided for two or three weeks.

The fatal results, therefore, in the cases enumerated were not attributable either to hospital gangrene or traumatic erysipelas. The experience of all hospital surgeons fully corroborate our own experience, that puruloid infection or pyæmia is not confined to wounds of an unhealthy character. We have frequently witnessed patients attacked with this grave and fatal malady, whose stumps were looking well, and whose wounds from projectiles presented all the characteristics belonging to healthy wounds.

All the cases of hospital gangrene enumerated were of a grave character, with the exception of two, and presenting in the aggregate the most destructive sloughing I ever witnessed, embracing in its ravages extensive ranges of tissue, involving the skin, superficial and deep-seated fascia, muscular, inter-muscular septa and areolar tissue, endangering nerves, arteries, veins and periosteum. A large number of the cases did not come under our treatment until this condition existed, owing, in most instances, to a prejudice on the part of the

patients to the infected ward, and also to separating from kind surgeons, matrons, nurses and acquaintances. The opinion, too, was prevalent, to a certain extent, that the removal to the tents was a resting-place en route to the dead-house.

The history, causes and symptoms of hospital gangrene and erysipelas are too familiar to every surgeon, especially those in hospital practice, to demand at our hands a minute description. It is our purpose, therefore, to give an outline of the treatment adopted in connection with foregoing results, and which are divided by all logical writers into local and general or constitutional:

Local Treatment by Escharotics.

All surgeons agree in regard to the power and efficacy of escharotics in arresting sloughing, although there exists a difference of opinion in relation to the value and certainty of their favorite remedies, some preferring pure nitric acid and the acid solution of the peroxide of mercury, others the chloride of zinc in combination with the sulphate of copper and lime-water, forming a paste. Our experience, however, with these remedies, has fully satisfied us that they must all yield to the per-sulphate of iron in combination with pure nitric acid or a combination of sulphate of iron with the sulphuric and nitric acids, according to the subjoined formula:

Take—Acid. Sulphuric, 4 drachms; Ferri Sulphas, 4 ounces; Acid. Nitric., 5 drachms; Water, 6 drachms; or this ratio of combination, if you wish a larger amount prepared.

Add the sulphuric acid to the sulphate of iron, stir well, and then pour in the nitric acid to the mixture in a porcelain mortar and stir until fumigation ceases. We find a difference of opinion to exist on the part of the medical staff in relation to the power and efficiency of the per-sulphate of iron, as the mixture is usually termed. This arises from the fact that in moderate cases any preparation, under the strength of the foregoing formula, is too weak to contend with the disease in a large majority of the cases as they occur. We have tried the weaker preparations, and were, in many instances, disappointed. The advantages of this preparation over the pure nitric acid as a safe, efficient, energetic and rapid escharotic are numerous. It affords little or no pain to the surrounding healthy tissue, and much less to the parts diseased, but which are endured with more or less sensibility. This is not the case with the pure nitric acid. It also produces a rapid eschar frequently in two or three applications. Humidity being characteristic of hospital gangrene, the morbid discharge, the result of rapid disintegration, should be washed off. This preparation, however, is not to be thwarted in its action by the fluids. It will require perhaps more frequent applications if this precaution is not observed, yet it will surely produce the desired char or eschar of the sphacelated tissue, which can then be easily removed or turned out by the handle of the scalpel or spatula. It should never be separated by force.

After the pulpified mass, resembling the parenchyma of the plumb or grape, is thus hardened into a dry eschar or charred, the further use of the escharotic is quite an unnecessary waste

of the remedy. The eschar should be removed, if loose and easily separated from the living tissues beneath. The application should be made twice per day until this condition is induced. In order to promote a separation of the dead from the living tissue, we used the tan-oose poultices, procuring the tan-oose from a convenient tan-yard. The decoction is much stronger than that made in the hospitals. We used the decoction from the chesnut oak, the red and spanish oak, ignoring the black oak bark decoction, which, in combination with the per-sulphate of iron, causes a black inky discoloration of the parts, thus preventing a satisfactory inspection by the surgeon. The tan-oose poultice proved a most valuable auxiliary by its action upon the surrounding red or livid areolæ which accompanies the phagedæna, especially when complicated with cellulocutaneous erysipelas. The hardened halo, which presents a true type of the inflammatio debilis, is much improved by the detergent and emollient effects of the oak-bark cataplasma. In addition to these results, the poultice separates the charred and dry from the living tissue, and producing such marked antiseptic properties as to render unnecessary the use in the ward of either Labarraques' or Darby's chlorinated antiseptic mixtures. The oak-bark decoction, composed chiefly of gallic and tannic acids, in addition to its powerful astringent properties, evinced antiseptic qualities of no ordinary power. The tincture of iodine also played an important part in controlling and subduing the deep-seated erysipelatous inflammation of adjacent parts. If the improvement in the constitutional symptoms should not keep pace with the salutary action of the escharotic, after the first eschar is removed, a re-application will become necessary. The skin, cellular tissue, and the areolar elastic fibrous fascia, are the first to yield to the march of the cruel invader. Next the aponeurotic or deep-seated fascia of the limbs, which is so important for forming and enclosing distinct sheaths to important muscles and tendons, is the last to yield. They are easily recognized from the cellular tissue and superficial areolar fibrous tissue by their structure, which is pure white, iridescent and unyielding. The pulpy dead tissue need be touched with the escharotic only, whilst the surgeon can make an effort, frequently successfully, to save the deep-seated fascia; for the redeeming feature of the escharotic is that it injures but slightly, if at all, healthy tissue. Great experience and discretion are required in watching the progress of this grave malady, especially in combination with erysipelas. The coats of the arteries, yielding with great reluctance, must eventually give away, and as we have no solidification or occlusion of their channels up to the collateral branches by plastic lymph, no time is to be lost in arresting the sequelæ of sub-cellular erysipelas as well as the phagedæna which will eat and destroy by sloughing and disintegration, the vital and important tissues implicated or threatened.

If, upon the removal of the charred mass of sphacelated tissue, the wound or ulceration should present an unhealthy aspect, with a tendency to a renewal of the sloughing, the escharotic should be again applied, and the poultices applied at each application, which is made with a mop of lint, with the poultices coming immediately in contact with the slough.

At each dressing great care should be taken in washing off all sanious pus or ichorous secretions about the parts. If the wound should look healthy and disposed to granulate, evinced by florid sugar-loaf granulations, the simple cold-water dressings are all-sufficient. We sometimes find the diseased parts or hiatus presenting a varied aspect. At one point a small patch of healthy granulations; at another, the true type of the gangrenosa; at a third point, nature is making an effort at reparation by flabby, indolent or exuberant granulations.—We now institute the escharotic and stimulant treatment *pro nata*, using the strong escharotic at one point; the sulphas cupri, 1 drachm, to 1 ounce of water at another; 10 ounces sulph. cupri, 10 grs. to 1 ounce of water at another; thus meeting the varied conditions of the diseased parts, until the whole presents a uniform healthy surface of granulations, followed by reparation and cicatrization, when we again resume the simple dressing.

Burrowing of either ichorous or laudable pus must be sedulously guarded against in erysipelas phlegmonodes, either complicated or not with hospital gangrene, by position and bandages, and with free, deep incisions, to preserve from disorganization the sub-cutaneous and the intermuscular areolar tissue, periosteum and bones, lest your patient shall sink under irritative fever, suppurative chills, and last by puruloid infection or pyæmia. When the disease attacks the extremities, an elevated position greatly aided us with the kind offices of nature to effect a cure and preserve both life and limbs.—In all cases you have an asthenic or hypostatic hyperemia of the limbs. There is a feebleness of nervous energy in the capillary system. The blood, like all fluids, will obey the laws of gravitation. By an elevated position, you promote the reparatory process and avert cedema or pitting of the cellular tissue. The low state of vital power is sustained thereby, by observing and controlling (upon the principle of hydrostatics) the ordinary laws of gravitation, thus removing the enfeebled and contaminated nutrition in the surrounding and adjacent tissues, and preventing also the re-accession of the phagedæna. We had two or three cases to seriously relapse, who were treated by apposition and alteration from prematurely lowering their limbs, and thus suddenly filling the weakened capillaries in the healthy granulating surfaces, when capillary hemorrhage ensued, with a consequent return of the sloughing. Hence, great vigilance was required in compelling our patients to gradually lower their positions, as they convalesced.

Constitutional or General Treatment.

In the beginning, the native causes and predominant type of these diseases should be taken into consideration by the surgeon, as a guide to the adoption of correct principles of therapeutics, upon which all favorable results depend.

A leading characteristic or pathognomic trait of these diseases is an irritative type of typhoid fever, with increased frequency of the pulse, ranging from 100 to 130 beats per minute—with a reduction both in its force and diameter, anxiety of countenance—with involuntary tremors of the muscles of the extremities and the tongue. Upon the ad-

mission of our patients, it was frequently the case that they would present all the symptoms attendant upon the excessive use of opium or alcohol, when little or none had been taken. They evinced a striking diminution of the vital forces marked by a perverted change of nerve power, and of the vascular and muscular systems.

The exposure incident to the life of the soldier, his irregularities of diet, in regard to quantity and quality; the wear and tear of marches, and the mental disquietude, are all well calculated to superinduce this depraved and enfeebled condition, thus greatly disturbing the vital functions of circulation and innervation.

The treatment was, therefore, strictly stimulo-tonic and supporting. We endeavored to uphold the vital power of reparation; we invoked also the aid of large calmate doses of opium at bed-time, from one to two drachms of tinct. opii, or four grains of solid opium, which improved the secretions, soothed and quieted the nervous irritation and muttering delirium dependent upon an enfeebled and perverted nutrition of the cerebral mass. We prescribed whiskey in all cases in small doses of one to two ounces every three or four hours; tinct. ferri mur. gtt. xxx, with one gr. quinia as an auxiliary tonic. In cases of erysipelas we gave sulph. quinia 25 to 30 grains every twenty-four hours, in divided doses, in combination, with marked benefit in controlling the chills, irritative fever and profuse and exhausting sweats. Alcohol acted the part of a stimulant to the nervous system; it sustained the process of calorification and shielded the tissues. Alcohol, as a combustible food, is easily absorbed from the blood vessels of the stomach; as a hydro-carbon, in combination with nitrogenous articles of food, it aids in supplying the demands for oxygen to maintain animal heat. It renews the current of the circulation with great facility, and imposes little or no labor upon either primary or stomach digestion, or secondary digestion. That a deficiency of oxygen in the human system plays the part of cause and effect in relation to hospital gangrene, I do not entertain a doubt. The treatment which we have premised, with accompanying results, will bear us out in the conclusions to which we have arrived.

Since our views and treatment were being written for publication, we have accidentally noticed some written experiments, of more than ordinary interest, made in the Hotel Dieu, in Paris. Dr. Langier, and also a medical student, treated 2 cases of hospital gangrene in the leg and foot, successfully, by enclosing the diseased parts in an apparatus to disengage oxygen gas continuously. The result was that, in a short time, the gangrene was promptly arrested both in the feet and legs of their patients. Other experiments of like character were performed and followed by similar results, which proved beyond doubt that oxygen was an effectual stimulant or remedy for the disease. I regret that time and space will not now allow me to elaborate fully my views on this important subject. We have designed to give facts, and scarcely more than allude to the therapeutical principles and their application to the grave malady in question.

Alcohol exerts its influence upon the nutrition of the ner-

vous system by supplying appropriate fuel or material for the maintenance of animal heat. In small and frequent doses it acts as a specific stimulus to the nervous system, calms and soothes our patients, and as a combustible fluid or food, maintains a normal condition of the nerve cell and tissues. Whilst we are feeding the process of calorification, we are fortifying and guarding, at the same time, against the rapid waste of tissues during the process of oxidation which must occur to maintain it. It is a question of demand and supply. A certain and sure cause of depression of vital power and relapses in three of our patients, was a faulty digestion and anorexia. If our patients did not eat, the gangrene would. The disease would feed upon the tissues until death closed the scene. With the free administration of whiskey our patients took nutritious or nitrogenous food freely and of easy digestion.

In this morbid combination of asthenic action, growing out of the altered and perverted functions of nutrition and assimilation, there was in most of our cases an impoverished condition of the blood, with a marked diminution of its red corpuscles and also in the quantity of fibrin.

In this condition, the tincture of iron was an indispensable remedy: whilst it improved and aided greatly the powers of digestion, it maintained the desire for appropriate animal food.

Under the treatment described, both local and general, a success more than was reasonably to be expected, rewarded our efforts, and without claiming anything original in the practice, we hope that this paper may be found not without interest to the reader.

ART. IV.—Cases of Gunshot Injury Requiring Ligation of the Artery. (From Reports in Surgeon-General's Office) Collated by H. L. THOMAS, M. D.

Carotid

Case 1.—B. Creecy, company "E," Forty-Second Virginia regiment, wounded May 3, 1863, by a Minie ball, passing through the larynx above the vocal chords and carrying away the epiglottis. The common carotid of the left side was ligated on the 12th for excessive arterial hemorrhage. No chloroform could be administered. Patient fainted during the operation. On the morning of the 18th the right common carotid had to be ligated. Patient died thirty-eight hours after second operation. No brain symptoms supervened, and the heat of the head was retained. Autopsy: the hyoid artery of the left side was wounded; both carotids had been effectually secured, *Operated by Surg. R. Murdock, P.A.C.S.*

Case 2.—J. W. Jones, company "E," Twenty-First Mississippi regiment; wounded May 3, 1863; ball entering left ear, fracturing the superior maxillary bones, and escaping at the right angle of the mouth. The wound began to slough on the 3d of June, and on the 5th, 6th and 7th hemorrhage occurred. Carotid artery was tied on the 7th; and patient died same day.

See page 137.

Case 3.—Richard Kelley, company "C," Sixth Louisiana regiment; wounded July 3, 1863. Division of external carotid by Minie ball. Common carotid ligated July 13, 1863. Left at Williamsport, Md.

Case 4.—Moses Hutts, aged 35. The lower jaw was badly shattered, and the tongue injured. The right common carotid was ligated June 7th; hemorrhage did not recur; patient died on the 8th.

Case 5.—J. H. McGuire, company "K," Twenty-Fourth Mississippi regiment; wounded September 26, 1863. Ball entered lower portion of the left mastoid process and lodged. Ligation of common carotid artery at upper third, Oct. 10th, 1863. Died on the 24th inst.

Case 6.—Daniel Shookley, company "I," One Hundred and First Indiana regiment; was wounded Sept. 20, 1863, by a round musket ball entering the face about an inch from the corner of the mouth, passing downwards and backwards, across the upper part of the neck, badly fracturing the lower jaw in its passage. The ball was extracted near transverse process of third cervical vertebra. The patient had hemorrhage from the entrance wound amounting to one quart on the 25th of September; hemorrhage recurred again on the 30th. Three other hemorrhages, of October 6th, 9th and 10th, respectively, so reduced the strength of the patient, that the common carotid artery was ligated. The ligature separated on the 29th of October. Recovery perfect.

Case 7.—M. W. Smith; wounded May 5, 1864; ball entered the left temple just above zygoma, ranging downwards and backwards beneath the ear and immediately under the mastoid process, and passing out through the soft parts of the neck. On the 12th of May secondary hemorrhage supervened, which was controlled by pressure. It occurred from day to day until the 21st, when the common carotid was ligated. The hemorrhage was controlled, but the condition of the patient was anæmic, and he died in twenty-four hours, evidently from the want of supply of blood to the brain.

Case 8.—E. F. Lilley, company "G," Eighth Texas Cavalry, aged 24; was wounded May 9, 1864, by a Minie ball in the face. Secondary hemorrhage, to the extent of one pint, occurred on the 16th, apparently from wound in right side of the mouth. At six o'clock, P. M., there was a repetition of the hemorrhage, amounting to about three pints, from same point. The right primitive carotid was ligated in the inferior triangle, in the usual way, and with very little additional loss of blood. Chloroform was not used, and the patient bore the operation well. The operation was successful to the extent of arresting the hemorrhage, of which there was no recurrence. The patient died May 16, 1864, with well marked cerebral symptoms.

Case 9.—G. W. Nelson, company "K," Twelfth Georgia regiment; was wounded June 6, 1864, the ball entering posteriorly to left ear, passing upwards and forwards, and emerging at the infra-orbital ridge, fracturing the zygoma. The wound was extensive, and the hemorrhage considerable. The cavity was plugged after the removal of loose bone, but the hemorrhage returned the next day, and the external carotid was ligated. Hemorrhage recurred two days successively, in

the last instance produced by patient's tearing off the dressings in his sleep. The patient died on the 19th.

Subclavian.

Case 1.—Corporal G. M. Caughman, company "K," Thirteenth South Carolina regiment, aged 25; wounded July 3, 1863, the ball passing through upper part of the chest, wounding the lung and the subclavian artery where it passes between the clavicle and first rib. The subclavian was ligated on the inner side of the clavicle. The operation was successful; the patient was furloughed, with the wounds entirely healed, but with the left arm paralyzed.

Case 2.—J. H. Kitrell, company "D," Third Tennessee regiment; wounded July 12, 1863, the ball fracturing humerus, and primary amputation being performed through surgical neck. The stump was progressing well until July 20, when slight hemorrhage occurred, which was controlled by pressure. Hemorrhage recurred again on the 28th, and digital pressure was diligently applied up to Aug. 2d, when the hemorrhage again took place more copiously than ever. Effort was then made to expose the bleeding vessel by tearing open the flaps, but the adhesions were too firm, and, the hemorrhage proceeding from two points, it was determined to ligate the subclavian at its third division. The patient, under chloroform, bore the operation well, but required stimulation, having lost largely of blood from the stump, but none from the operation itself. The separated flaps re-adhered, and the ligature came away on the fourth of September. The patient was furloughed the latter part of the month.

Case 3.—John T. Endy, company "F," Fifth North Carolina regiment, aged 23; wounded July 2, 1863, the ball entering one and a half inches below the scapula, ranging forwards, but having no exit. There was great tumefaction and effusion about the shoulder, while the wound under the deltoid region was filled with clots of blood. Hemorrhage supervened on the morning of the 16th, but was controlled by pressure and styptics; it occurred again the evening of the same day, and was controlled in like manner. On the morning of the 17th, very profuse hemorrhage took place, which could only be controlled by pressure over the subclavian artery. Exploring the wound failing to detect the bleeding vessel, it was determined to ligate the subclavian in its third division. The operation was performed without any untoward accident, but, while the hemorrhage was lessened, the flow of blood could not be entirely arrested in the wound, even with the assistance of styptics; it was therefore decided to ligate also the suprascapular artery, which had been exposed in the operation; this being done, the hemorrhage immediately ceased. The patient was put to bed with the arm warmly wadded, and at night there was sufficient temperature in the parts below the seat of ligature. The ligature from the suprascapular came away on the tenth day, and that from the subclavian on the thirteenth day. The patient got well without any bad symptom, and was furloughed on the 31st of August. The ball was not discovered.

Case 4.—W. S. Averitt, company "H," Fourteenth Tennessee regiment; wounded Aug. 9, 1862. Arm amputated

just below surgical neck. Excessive hemorrhage having supervened, the subclavian was ligated at usual point. Died January 26, 1863.

Case 5.—A. C. Howard, aged 19; wounded May 31, 1862. Ball passed through left shoulder, injuring the spine and producing paralysis. June 7—ligation of subclavian artery in consequence of hemorrhage. Died June 18.

Case 6—J. W. King, company "C," Twenty-Ninth North Carolina regiment; wounded Sept. 19, 1863, the ball passing through shoulder joint, fracturing and detaching head of humerus. The ball entered near the coracoid process and passed out over the spine of the scapula. The accident was followed by a high degree of swelling and inflammation, extending from the seat of injury down the forearm; suppuration copious and offensive, with high irritative fever. On the 10th of October there was hemorrhage from the anterior wound, which was arrested by pressure; on the 11th, the hemorrhage recurred copiously from both wounds, and the subclavian was ligated in its external third. There was no further hemorrhage, but gangrene attacked the wound of operation on the 20th, and the patient died the next day.

Case 7.—Result fatal. (This case is reported in full in the February number of the Journal, by Surgeon Browne.)

We give below a tabular statement of the rest of the cases of ligation, including those detailed above:

Vessel.	Cases.	Recovery.	Death.	Undetermined.
Carotid	9	1	7	1
Subclavian	7	3	4	0
Axillary	7	2	5	0
Brachial	43	30	5	8
Arteries of Forearm	16	14	1	1
Femoral	53	24	24	5
Profunda	3	1	1	1
Popliteal	2	1	1	0
Arteries of the Leg	11	5	4	2
All others, including Facial, Temporal and Occipital	6	3	3	0
Total	157	84	55	18

In giving the above report, it is not pretended to include all the ligations performed, but simply all that have been reported. Medical officers can look over it and see to what an extent the deficiency lies at their own doors. That the bloody work through which the army has passed in four campaigns has demanded only 157 ligations, and many of these of only a trivial vessel, is an estimate which cannot be adopted. Certainly more operations of this character have been performed, for the number reported does not bear a respectable ratio in the chapter of gun-shot accidents. The presumption is, they have not been reported, and are sleeping in the case-books of the hospitals. Gentlemen may see to what a desirable use full reports of each special branch of surgery may be put—namely, the laying of them before the profession at large, and especially before those officers whose experience has not yet brought them in contact with such cases.

Even in many of the reports the data are so meagre as not to furnish any satisfactory conclusion with regard to the gravity of the case. Brevity is a very commendable feature in clinical reports, but should not be pushed to the extent of

robbing the case of its interest. "Alexander died—Alexander was buried;" but there are some people who would be curious to know how he died and when he was buried; and it is a lean obituary that does not give these small items. Some of the reports, indeed, seem to have been based upon the editorial warning that "funeral notices of more than — lines will be charged for as advertisements." But we are satisfied there is room enough in the Surgeon-General's office for reasonable and instructive post-obits, and if they are transferred to the pages of this Journal, disquisitive platitudes may be modestly retrenched, but deficient data cannot be supplied.

ART. V.—*On Treatment of Hospital Gangrene, by Circumscribing Wound with Knife.* By T. J. L. DE YAMPERT, Surgeon P. A. C. S. Newsom Hospital, Georgia.

It is my purpose to offer a few practical remarks upon the treatment of hospital gangrene—the product of thought—confirmed by the test of experience.

Of the pathology of gangrene I might say much that would amount to little, touching the conviction of other minds. I believe "Hospital Gangrene," in its incipency, to be entirely a local disease; as it advances, however, in different constitutions, at irregular intervals, we mark the traces of constitutional contamination.

This much then said by way of parenthesis, I approach the subject of treatment, the essence of which is expressed in few words.

I advocate the use of fuming nitric acid at irregular intervals, applied locally to gangrenous points; the wound then to be plugged with lint, saturated with ol. terebin; sloughs to be carefully dissected out when sufficiently loosened, and, if indicated, ferruginous or bark tonics, stimulants, etc.

As a medical military man, however, I propose, in addition, a movement in force, so to speak upon the flank and rear of our enemy—gangrene, and this movement can be accomplished in nearly all cases in their incipency, without much ultimate loss of structure.

"It is done by circumscribing the wound with a knife."

We have then, at least, a circumference of healthy tissue, an impregnable bulwark of defence.

Now, in the circumference of gangrenous sores, there is a hardened, indurated ring of tissue, which acts as a circular line of defence, behind which much and irreparable damage can be done to structure, while our attention is wholly occupied with the centres of the sore.

I hold that in circumscribing the wound immediately, which has to be repeated afterwards, during progress of cure, seldom more than once, we gain a circular nucleus, as it were, of healthy tissue; which maintains, during the progress of the cure, a disposition to remain healthy; in fact, this now healthy ring of tissue acts as a "whipper in," and confines the disease to the centre.

Phagadema Gangrenosa, in its onward course of destruction, meets with more resistance in muscular and tendinous structure than in does it cellular and adipose tissue, consequently,

if we surround and confine the disease, we, in the majority of cases, with facility, will be able to strangle the disease by the gradual encroachment of the healthy ring of tissue radiating towards the centre of the sore.

I have, by this procedure, turned a gangrenous into a healthy sore within twelve hours.

I am confirmed in the belief that this mode of procedure, assisted by the therapeutical agents before mentioned, is the radical and rational treatment for a gangrenous sore. By this plan we will lose less skin, and superficial, as well as deep tissue; the more tissue saved the less liability to contraction, and consequent deformity.

C. S. Medical & Surgical Journal.

RICHMOND, NOVEMBER, 1864.

AYRES & WADE.....PUBLISHERS AND PROPRIETORS.

EDITORIAL.

Prospectus of the Confederate States Medical and Surgical Journal. Second Year.

Thanks to the influence and support of the Surgeon General and Medical Department of the Army, and to the zealous co-operation of the profession at large, we have the satisfaction of announcing to our friends and readers, that the *Confederate States Medical and Surgical Journal* has, in one year, reached a circulation hitherto unattained by any scientific publication in the South, and in spite of many difficulties and drawbacks, hopes to merit still more the patronage of the Southern medical profession.

Owing to the scarcity and high price of paper, it is absolutely necessary that the publishers should ascertain, as early as practicable, the probable size of their January edition, and hence, all persons intending to subscribe for the year 1865 are earnestly requested to forward their names and subscriptions, either by express, or, if in the army, through the Surgeon General's office, before January 1st. They will be careful to state exactly name and post-office, or army corps to which they are attached.

Subscription for the year 1865, \$20, invariably in advance. Express charges will be paid by the publishers, and the postage to army subscribers will be paid at the Richmond office. All communications should be addressed to Messrs. Ayres & Wade, Richmond.

The *Journal* will be under the same editorial management as heretofore, with a large and increasing corps of collaborators. Its communications with Europe will enable the editor to furnish a synopsis of all recent foreign publications of value; and it is believed that the home profession will aid in this effort to found a Southern Medical periodical on a firm basis, by supporting with purse and pen our infant enterprise.

CHRONICLE OF MEDICAL SCIENCE.

On the Absorption of Dead Bone. By WM. SCOVELL SAVORY, Esq., F. R. S., Assistant-Surgeon to St. Bartholomew's Hospital. Royal Medical & Chirurgical Society, April, 1864.

Can dead bone be absorbed? This question still awaits a satisfactory answer. For while careful and accurate experiments have furnished only negative results, there are unquestionable facts which compel us to admit the possibility of the occurrence. One all-important consideration seems to have been hitherto neglected in the inquiry—the influence of pressure in determining the result. Thus, in the experiments which have been performed on the subject, and which have naturally led to the conclusion that dead bone may be kept amidst living tissues for weeks or months without losing the merest fraction of its weight—in these experiments the dead bone was kept in simple contact only with living parts. It appears that no considerable pressure was maintained. Whereas when ivory pegs are driven into bone, extreme pressure is of course produced. In order to test this view, some experiments were performed which are related in the paper. It appeared to the author that the only explanation which can be offered of the results of these several experiments is, that the absorption of dead bone, when in contact with living bone, is determined by the pressure to which it is subjected.

The President said the communication was interesting in connection with the experiments of Mr. Gulliver. The state of the fragments in cases of ununited fracture had been noticed before; but it had not been attributed to the cause which was explained in Mr. Savory's paper.

Mr. Hilton said the profession ought to feel obliged to Mr. Savory for having adduced, by well-considered and well-arranged experiments, such conclusive evidence of the absorption of dead bone by the surrounding living tissues—a fact not usually admitted by surgeons. He (Mr. Hilton) had several times noticed, on looking at two ivory pegs which had been employed in the same case of united fracture, and apparently under the same conditions, that the surface of one of them was partially absorbed, whilst the other did not manifest any loss of substance—a difference hitherto inexplicable, but now elucidated by the author's paper, as depending upon the variable pressure to which they had been subjected. An interesting point, however, presented itself for consideration, to which the author had not made any reference—viz: what was the amount and duration of pressure required to induce this absorption? for dead bone was often seen buried within granulations which were undoubtedly capable of exerting much pressure without the slightest appearance of any absorption having occurred. For instance, in the case of an amputation through the femur, the same end of the bone may come away necrotic after several months' subjection to the pressure of muscles, fascia, granulations, bandaging and strapping, yet the track of the teeth of the saw used at the amputation would be seen as cleanly cut and as sharply defined as on the day of the original operation. The same kind of facts was quite as discernible in cases of compound fracture of a long bone, where the fractured end of the bone, although surrounded deeply by

granulations and new bone during several months, would present the sharp, well-defined edge of the fracture as evidently as on the day of the accident, uninfluenced by the pressure of any of the surrounding living tissues. Mr. Hilton had removed from the leg several portions of a comminuted compound fracture of the tibia eight years after the accident and seven years after the closure of the external wound, and upon two of them the well-defined edge of the original fracture was obvious and markedly different from the serrated edge observable where the piece of bone had been separated from the living bone by the slow process of absorption. Mr. Hilton would suggest to the author the inquiry as to how or by what combination of minute events does pressure contribute towards absorption of dead bones, because the pressure in his (Mr. Savory's) experiments was made equally on both the living and dead bone. No doubt such an investigation could not be placed in better hands than those of the author of the paper.

Mr. Partridge inquired whether the absorption of the pegs was greater in the shaft of the bone or in the medullary canal.

Mr. Savory said absorption was greater in the shaft portion than in the medullary canal.

Mr. Coote said that Mr. Savory's experiments were very interesting in confirming the view entertained by many surgeons that, in the removal of dead bone, the action of the absorbents was possible in the material that had perished. He had himself witnessed the corrosion of the surface of ivory pegs introduced into living bone for the purpose of promoting union in a non-united fracture. The possibility of the fact, which had been doubted, was important; but, after the experiments thus detailed, could not be denied. He (Mr. Coote) thought that perhaps pressure alone was not sufficient to explain the phenomena of removal. He had witnessed the separation of large portions of bone, which he believed to be dead, on which no pressure could have been exerted. But the fact remained the same; and the value of Mr. Savory's observations must be undisputed. He (Mr. Coote) concluded with some remarks on the relative size of sequestra and the bony cavities which contained them.

Mr. Brooke said that he doubted whether the process by which the surface of the pegs was eroded could truly be designated a process of absorption. He thought it probably analogous to the process of disintegration, by which the surface of a sequestrum is acted on by the highly vascular granulating surface with which it is contact. That disintegration, and not absorption, is going on in cases of necrosis, may generally be rendered evident by the appearance of the debris of bone-tissue in the pus discharged from the cloaca.

Mr. Wood asked the author whether, in each of the experiments detailed, the condition of the medullary membrane in contact with the peg had been observed, as regarded the presence of granulations or other absorbing structure. In many of the cases in which the pegs had been loosely inserted, extensive suppuration, and in some instances death, had followed. Could the action set up in these cases have been that of a process destructive to the absorbing or vital powers of the bone and medullary membrane operated on, this would of course prevent the occurrence in these experiments of any absorption of the foreign or dead bone. He

presumed that in all the experiments pegs made of the same dried bone had been used, and that there was in no case introduction of putrid matter. In most of the pegs shown in the box handed round which exhibited any evidence of roughening, this extended equally through the parts embedded in the bone of the animal, although only the part traversing the compact tissue of the cylinder of bone had been subject to pressure. The intermediate portion had been in contact with the medullary substance. In the specimen from which the drawing was taken the peg seemed even more attenuated in the cavity of the bone than where in contact with its walls.

Mr. Solly remarked that, while agreeing with all the former speakers in the great value of Mr. Savory's paper, he did not think that it subverted all the old opinions that dead bone could not be absorbed except under pressure: for instance, in necrosis of the parietal bones—a good case of which he had in his mind's eye—where the bone died, became black, lost its sensibility, and was then separated from the living bone because it was dead. The sequestrum which was thus cast off was perforated in all directions as though worm-eaten, and absorbed in patches. Was not this an instance of dead bone being absorbed without pressure? Had not every surgeon in the room seen such cases?

Mr. Savory, in reply, said he had considered it best in the paper simply to demonstrate the fact that the absorption of dead bone is determined by the pressure to which it is subjected. In working at the matter, of course he had thought of the nature of the influence thus exercised, but he did not consider any opinion which he might have formed on the subject worth expressing. The question was not in relation to the absorption of the bone, whether living or dead, but to the effect of pressure on the absorption of *dead* bone. With respect to the case Mr. Solly mentioned, it was not enough to show that dead portions of bone bore evidence of having been partially absorbed: it must be shown that such absorption occurred after the death of the bone, and thus independently of all pressure. Mr. Savory defended the use of the word "absorption." He had not employed the term without foreseeing the objection that might be urged against it; and so he had been careful to relate how, in some of the experiments, the wounds at once closed and completely healed without any discharge or other means by which disintegrated fragments of bone might have escaped. Moreover, if the preparations were examined, it would be seen that, in some of them, the portions of dead bone which had been removed could not have escaped, for the holes were tightly plugged by the pegs which had been driven in. With reference to the destination of the bone which disappears in disease, Mr. Savory thought that the evidence advanced to prove that this is always disintegrated and cast out, was unsatisfactory and inconclusive. Of course in some forms of ulceration of bone, as in phagedenic ulcers of soft parts, disintegrating fragments might perish and escape; but in other less destructive forms of ulceration bone might disappear through absorption. Much had been made of the fact that the discharge from carious bone contains an unusual abundance of phosphate of lime, this being supposed to represent the dissolved osseous tissue. But while, on the one hand, this would prove too much, the proportion of bone which disappears not being equal to the quantity of phosphate of lime discharged; on the other hand, a better, a more philosophical explanation of the fact might be given. As in health each part as-

similates to itself from the blood its own proper constituents, so in abnormal forms of nutrition it was reasonable to believe that the material furnished by different structures would present characters of composition more or less corresponding with those of the tissue whence it proceeded. Be this as it might, however, in some at least of the experiments described there was no means by which the portion of bone which had disappeared could have escaped externally.

On a New Operation for obtaining union of an Ununited Fracture, with Remarks on its Application in Certain Cases of Recent Fracture. By E. R. BICKERSTETH, F. R. C. S., Surgeon to the Liverpool Royal Infirmary.

In bringing this subject before the attention of the Society, the author proposed to mention some cases that had occurred in his practice to show the successive steps by which he arrived at the process in question. He had frequently tried, in vain, friction, accupuncture, and subcutaneous division; and though resection of the ends of the bone had been successful in some instances, it was a proceeding involving a considerable risk to life. Dieffenbach's method had proved to be more successful; but this operation, though conducive to the formation of new bone, in no way provided for what was of paramount importance—viz: absolute immobility of the opposing fragments. The large external wound and injury done to the soft parts in introducing the ivory pegs were also objections to this operation. Recognizing the happy influence of Dieffenbach's plan of exciting ossific deposit, and, at the same time feeling the importance of keeping the ends of the bone in a condition of absolute immobility, the author was induced to try a modification of the operation; and in the case of a man admitted under his care at the Liverpool Royal Infirmary with an ununited fracture of the radius, he drilled a hole through the ends of both fragments, and, passing a stout wire through it secured the bone in perfect apposition. Union took place in seven or eight weeks, but on endeavoring to remove the wire, so much traction was necessary that it caused the fracture again to be ununited. The difficulty of removing the wire induced the author to think of some other plan not open to this objection; and in the case of a man with an ununited fracture of the thigh, by means of a common Archimedeian drill, he bored two holes in such directions that each passed obliquely through both ends of the fractured bone, and into each introduced a steel rod with a screw at the end. To do this it was necessary to make an incision three inches in length. Much constitutional disturbance followed, the wound suppurating freely. In ten weeks the splints were removed, but no union had taken place. The limb was then confined in gun-and-chalk bandages. Symptoms of pleuro-pneumonia came on, and he gradually sank. A post mortem examination showed tubercular deposit in the ends of the bone and other parts of the body. There was no attempt at repair at the seat of fracture, except where the drills had pierced the bone, and here there was a deposit of new bone. This proceeding showed that it was quite feasible to fix the bone in the manner described, without exciting too much inflammatory action; and also that the steel rods caused the formation of new bone.

The next case was a fracture of the lower maxilla, where the bones had united in such a position as to render the patient a most unsightly object. As the incision that would be necessary in this instance, for the purpose both of putting the bone into proper position and removing the deformity of the soft parts, would not

allow the use of external splints or supports, and as it was found impracticable to effect this object by fixing the teeth by an appliance within the mouth, it was absolutely necessary that some means should be devised by which the divided portions of the jaw could be securely fixed; and it occurred to the author that pegs or nails would answer the purpose, especially as he had already observed their presence caused so little inconvenience. Accordingly at the operation, the plan just mentioned was carried out, and the apposition of the fractured portions was secured by means of two round-headed nails. They most effectually answered their purpose, and no external splint or bandage was required. The case did well, no undue action being set up. On the twenty-second day after the operation, one of the nails came away. The patient left the Infirmary perfectly well, the jaw being firmly united in its proper position, and the deformity of the soft parts removed. One of the nails still remained in; and the last account states that its presence caused no inconvenience.

The third case recorded was one that presented many points in common with the one just narrated. No external incision was made, and ordinary drill heads were substituted for nails. The result was everything that the author could have wished.

These cases show how readily and with what good effect fractured bones may be fastened together. Surgeons have ever recognized the use of sutures with regard to the soft parts. Why should we not, in cases of difficulty arising from an inability to keep the surfaces in proper apposition, adopt the same plan with the bones? Might not this process be applicable in some cases where division of the tendo-Achillis is required, or where such an operation as sawing off the ends of the bone is indicated? From a consideration of the cases narrated, Mr. Bickersteth proposed to treat an ununited fracture by passing one or more drills through the broken ends of the bone in such a manner as to secure their perfect immobility, and without making any external wound beyond that caused by the entrance of the drill. The limb should then be secured by properly adjusted splints, and kept at perfect rest. After two or three weeks the drills may be removed, and water-dressing applied to the punctures. For several weeks after, it would, of course, be desirable to continue the use of the splints. In conclusion, the author begged to place upon record three cases of ununited fracture recently treated by his friend, Mr. Fletcher, on the plan that he (Mr. Bickersteth) had suggested, and in each the result had been most satisfactory.

Mr. Fergusson said that he scarcely remembered to have heard a paper of greater surgical interest than the one just read. It had the merit of bringing out much that was going on in the modern practice of surgery, and thought the paper would lead to greater improvements in practice. Here was further proof, he continued, of the advantage of wire and metal in instances in which in former times we were loth to use such materials. He had had the impression that ivory pegs, being softer, would be less likely to do harm; but now the author had shown that metal might be safely used. And it had been shown, too, that the commoner metals were as useful as the rarer; that iron wire was as useful as silver wire. In the same way, cauterization by an iron instrument was just as useful as by a gold or silver one. Dieffenbach had used the pegs of ivory to create irritation only, but the author had gone further, and fastened the bones together by pegs of iron. The author had shown that much might be done in desperate cases of ununited fracture. From hearing the cases related by the author, he should consider that the plan was safe, and that it ought to command attention. Mr. Fergusson said that he once saw Mr. Abernethy attempt to pass a seton between the ends of an un-

nited fracture. Failing to do so, he left a probe sticking in the wound between the ends of the bones. The result was good.

Mr. Holthouse thought the interest of the author's plan was not only in fastening the bone together, but in doing it subcutaneously. This was a great merit, and no doubt would lead to the adoption of the plan and to beneficial results in practice. Mr. Holthouse then gave the particulars of a case of ununited fracture of the humerus under his care at the Westminster Hospital, in which he had adopted the novel proceeding of inserting the sharpened end of the lower fragment into the cancellous structure of the upper, thus imitating an impacted fracture. This plan, however, did not succeed. The case was, however, a complicated one, there being ankylosis of the elbow.

Mr. Holmes Coote rose to correct what he believed was a very general and erroneous impression as to the views of Dieffenbach. This surgeon used to cut down to the ends of the bones and pass in ivory pegs, with the hope of creating irritation; but, if he could do it easily, he used also to fasten the ends of the bone together. Mr. Coote thought that three classes of cases ought to be distinguished; first, those in which there was union in good time; second, those in which union was simply retarded; and third, those in which union could not be obtained, as the ends of the bones were in a state of fatty degeneration. In the third class no good results could be hoped for.

Mr. Curling regarded the author's plan as ingenious, as a happy application of the modern treatment with metallic substances and as calculated to be of great service, not only in ununited fractures, but also in compound and in complicated simple fractures, when it was difficult to keep the parts in position. He was struck with the remark in the paper that the author had met with numerous cases of ununited fracture. Though Mr. Curling had been long attached to a large hospital where a great many fractures were admitted, he had seen only a few cases of ununited fracture, and all of them had been brought to the hospital in that condition, most of them being the result of accident which had occurred at sea. The author, being surgeon to the principal hospital in the chief seaport city in this country, probably met with an unusual number of such cases. Mr. Curling had seen, however, many cases of delayed union, and mentioned two remarkable instances of the kind, one a double fracture of the thigh, which happened at sea seven months before, and might have been considered an ununited fracture, but which got firm in a plaster-of-Paris case. He called attention to a constitutional indisposition to ossific union, independent of the general health, which was manifested in young people as well as in adults, and gave an instance in point of long delayed union in a fracture of the tibia in a girl.

Mr. Barwell, while agreeing with what had fallen from Mr. Holmes Coote concerning the degenerated condition of bones, considered that such condition was the result, more frequently than the cause, of non-union. It was a law of animal nature that any organ losing its function should degenerate. Thus when a bone lost its power of support, the surrounding muscular pressure and other conditions of its healthy life, it will surely degenerate; but until that degeneration had reached a high point it might still be restored. A remarkable case had occurred to him lately, which would also show that in certain instances the admirable plan proposed by Mr. Bickersteth would be unavailing—as in cases where the non-union was produced by a large quantity of soft parts intruding between the fractured ends. The case alluded to was as follows: About eighteen months ago a man broke his arm about two inches and a half above the elbow. He was admitted into the Charing Cross Hospital. The fracture united well, and the man

was discharged cured. The same night, however, he got very drunk, and broke his arm again, but took no notice of the circumstance, continuing drunk for about a fortnight. Two months ago he again entered the hospital with a broken arm. As Mr. Barwell had been for some time taking the duty of his colleague, Mr. Canton, this case came, about a fortnight ago, under his observation, and he determined to operate. The upper and longer fragment was on the outer side, its lower end overlapping the head of the radius. The inner end of the lower fragment was half-way up the inner side of the arm. The movement to and fro of this portion was very considerable; but there was always a wide interval between the two bones, which was occupied constantly by the anterior brachial muscle, sometimes also by part of the biceps, and in certain positions it seemed as though the artery and nerve also got between the fragments. The man having been placed under the influence of chloroform, Mr. Barwell made an incision two inches long over the outer fragment, and, turning out its end, sawed out a wedge-shaped piece, so as to leave an angular gap or notch in the end of the bone. The inner fragment lay so far away from the wound, and in such close proximity to the artery and nerve, that the greatest care was required in getting its end to protrude at the wound. This, however, was accomplished without any untoward accident, and the end was cut into a wedge shape, so as to fit with some degree of accuracy the interval in the upper fragment; traction was made upon the arm, and the two portions fitted together, and with the aid of a splint they retained perfect apposition. A singular condition of bone revealed itself during the operation—namely, that the periosteum on the upper fragment was loose, and could be slipped up off the bone as a man might turn up his shirt-sleeves. This tissue was carefully replaced, yet, on account of this condition of bone, he (Mr. Barwell) could not but look to the issue of the case with some anxiety. The man had as yet (ten days afterwards) no bad symptoms.

Mr. C. H. Moore thought the plan suggested would be valuable in some cases; but there would be some risk to life by tetanus and pyæmia.

Mr. Hilton said that, as a surgeon to a large hospital, he must add to the commendations of the other speakers his opinion that the paper was one of great interest, and that the plan was likely to be very useful when ordinary treatment had failed. He (Mr. Hilton) understood Mr. Holmes Coote to say that when there was fatty degeneration of the bone the ends never would or could unite; yet the author had related a case of cure by his plan, although at the operation the bone was so soft that a knife was passed through it.

INTERESTING ANALYSES OF ARTICLES IN FOREIGN JOURNALS.

Digitalis in Hæmoptysis.—Speaking of hæmostatics in tubercular hæmoptysis, Dr. William Brinton says: "All else that I have to say of other remedies might almost be summed up in the statement, that it is in the terrible hæmorrhage of larger eroded vessels, and therefore of what is often advanced phthisis, that we have the most searching test of the value of any drug of this kind. Presuming we have such a means, we must very frequently use it. For it is often impossible to tell beforehand whether a slight oozing is not the commencement of a more considerable hæmorrhage, such as (directly or indirectly) endangers life. And I believe that we have such a remedy, for the majority of patients, in

digitalis. The ground for this strong personal conviction I find chiefly in the fact, that I have frequently seen profuse and alarming hæmoptysis, which had resisted many other means of treatment, including a judicious diet, and all the other drugs, yield to this active remedy, given so as to produce its well-known specific effects on the pulse. And not only so, but, in several cases, the interruption of the drug seems to have permitted the return of the hemorrhage, to be again arrested by the resumption of the *digitalis*."

Carbolic Acid (Hydrated Oxide of Phenyle).—This substance, a product of the distillation of coal-tar, may now be obtained in any quantity, in a state of purity, and at a moderate price. As a chemical agent, it is a powerful antiseptic and antiferment, arresting putrefaction, the lactic fermentation, and the conversion of tannic acid into gallic acid and sugar. Experiments are now proceeding to ascertain whether it possesses the same power respecting alcoholic, butyric and acetic fermentation. On these grounds it has been recommended for experiment, as a remedy, and it has been used in several cases in the Manchester Royal Infirmary—by Dr. H. Browne in chronic diarrhoea; by Dr. Roberts in cases of vomiting and dyspepsia, attended with pain after eating; by Dr. Ransome, locally, for ulcers and offensive discharges; and by Dr. Thomas Turner in gangrenous sores and fetid discharges from diseased bone. In all cases it is alleged to be very beneficial. The dose is one drop in solution. For external application, one part of the acid to seven of water is the suitable proportion. Dr. Calvert states that it is a remedy for the foot-rot in sheep. Mr. Heath uses one part acid to two parts water to sloughing wounds.

Exfoliation of the Female Bladder.—Before the Obstetrical Society of London, Dr. Harley read his report upon Mr. Spencer Wells' case of exfoliation of the female bladder. The specimen was a bag, or sac, as large as a child's head, and perfect on all sides except one, where there were several rents. The exterior was of a white color, and distinctly muscular, the muscular fibres running in an interlacing manner, as in the urinary bladder. The interior was of a dark color, and everywhere covered with gritty deposit, on the removal of which a smooth mucous membrane came into view. The gritty deposit consisted of crystalline phosphates and urates. Over a limited portion of the external surface is a patch of a smooth membrane, like a serous membrane; and if such, was probably a portion of the peritoneum. No ureters nor orifices of ureters were to be found in the specimen, and the position of the urethra could not be ascertained in consequence of the rents in the lower portion of the specimen. For a similar reason, it was impossible to discover whether the specimen was an entire organ or only a portion of an organ. The question, "Was it a human bladder?" could not be easily answered on anatomical grounds, for in its present state the specimen had neither the size nor the shape of a human female bladder. The moral evidence, however, was all in favor of the view that it was, as has been described, an exfoliation of a human bladder. Dr. Tanner remarked that there was a preparation in the museum of the Royal College of Surgeons which might help to throw light upon the present specimen. It was the product of a man suffering from retention of urine from a fall, and in whom the catheter could not be introduced in consequence of striking against something like a membrane. He was relieved by the bladder being cut into above the pubis, which allowed a large quantity of purulent fluid and a membrane to escape. On examining the layer of membrane it is seen to be of sacular form, six inches long and four broad. Its shape indicates that it lined the whole interior of the bladder, and

was thrown off in one piece. The outer surface is flocculent, and in parts distinctly fibrous; the inner surface is granular and reticulated, like superficially ulcerated mucous membrane. In fact, as the catalogue states, it exactly resembles the mucous membrane of the bladder, separated as a slough in one piece.

Vaccination through Cow's Milk.—M. Soubie, of Libourne, (France,) states, in the *Gazette des Hôpitaux*, that he vaccinated the teats of a cow and obtained two fine vesicles. The milk of this cow was given to two children, one six months old and being brought up by hand, the other fourteen months and weaned.—The first took this milk for two days, on the fifth and sixth day of the vaccination of the cow; the second drank it only one day, on the eighth day of the vaccination. This latter child consumed about ten ounces of the milk; the first, nearly double that quantity. One month after this experiment the two children were vaccinated in the usual manner, but with a negative result; whilst the same lymph used with them acted very fully upon another child vaccinated at the same time. M. Soubie was induced to try this indirect mode of vaccination by a case in which a mother was suckling an infant, and who was attacked with small-pox, continued to nurse her child, the latter being affected with slight fever, without eruption. At two and five years this child was attempted to be vaccinated, without result; and even at sixteen vaccination proved of no effect. So M. Soubie inferred that that child had been protected by the milk of the mother.

Edema of the Larynx.—Mr. M. W. Hilles says: "In this disease difficulty of breathing is induced by the elevated state of the mucous membrane lining the chordæ vocales, the epiglottis, &c., and is the result of the mechanical obstruction to the free passage of the air. Unfortunately, under these circumstances, a too small incision is made into the trachea or larynx, the effused fluid slowly exudes, the opening is obstructed, the difficulty of breathing continues, and the patient dies asphyxiated. Now, the operation which I consider should be performed, is that of laying freely open the interior of the larynx; and the best mode of doing this is by division of the thyroid cartilage along the mesial line, the incision being carried downward through the cricoid cartilage, if necessary. By this means a free escape is given to the effused fluid, the breathing of the patient is provided for, and in a short time the elevated state of the mucous membrane will subside. I can see no rational objection to this operation; there is really no danger, and even the chordæ vocales need not be touched. In a few days the wound may be closed, and sufficient union of the alæ of the thyroid cartilage will be soon established. I had an opportunity of examining a patient who had attempted suicide by a longitudinal incision of the thyroid cartilage. The man nearly recovered, and the only symptom remaining was a husky state of the voice, which I have no doubt has since subsided."

Reproduction of Bone.—At a meeting of the Academy of Sciences, Dr. Bismarck Piquot communicated a highly interesting paper relative to a case of regeneration of bone, which occurred in his practice. The patient, a boy of fourteen, met with a fearful railway accident, one of his arms being broken and one of his legs crushed under the wheels of a baggage truck. The tibia was smashed, or rather pulverized, into innumerable splinters, many of which were removed, and the fibula was in a like desperate condition. Although, from the nature of the case, a conservative course seemed to be rather hazardous than otherwise, nevertheless an attempt was made to save the leg. The limb was placed on a splint and subjected to continued irrigation for the space of thirty-

seven days, the quantity of water daily used in the process varying from twenty to twenty-five quarts. At the end of three months the few remaining shreds of periosteum began to resume their bone-making functions; and so successfully is this second crop of osseous tissue proceeding at the present moment, that ere long the entire tibia will have been replaced by new material, and the boy be able to walk without crutches.

Nævus Maternus; Deligation of the External and Common Carotids.—M. Bertherand has communicated the following case to the Surgical Society of Paris. A child four months and a half old was brought to the Algiers Hospital with a nævus covering the whole of the left temporal fossa, reaching above to the vertex, posteriorly to the occipital protuberance, and below to and into the eyelids, which could not be opened. The extensive mole was the result of the rapid development of a merevascular stain at birth. M. Bertherand first tied the external carotid, whereupon the tumor diminished considerably, and success was thought complete; but within a few hours the vessels filled again. Perceiving this in the evening, M. Bertherand placed the child again under chloroform, and tied the common carotid artery. The diminution and sinking of the tumor were not so plain now as after the first operation. On the third day, however, it began to shrink, gradually withered, suppurated in some places, and finally disappeared. Not the slightest untoward symptom occurred. The author thinks this is the only case where so young a child (four months and a half) was successfully operated upon. He mentions Mr. Wardrop, whose patient underwent the operation at the age of six weeks, but died in consequence of it; M. Mayo, who operated at five months, but where a relapse took place; M. Wardrop, again, who tied the vessel at seven months, M. Rogers at eight, Pirogoff at nine, and Zeis at fifteen. Of these cases, the first two were successful, but the last two did not survive.

Cutaneous Absorption.—A paper on cutaneous absorption, by M. Parisot, was read at the Academy of Sciences by M. Claude Bernard. The conclusions which are established by the researches of M. Parisot are: 1st, that salts, such as iodide of potassium, chlorate of potash, yellow prussiate of potash, sulphate of iron, as well as the coloring matters of rhubarb, dissolved in water, are not in any way absorbed into the skin, even after two hours immersion, for not the slightest trace of their presence can be found either in the urine or in the saliva, by which they are generally eliminated, and in which they may usually be found, when they exist at all in the system. 2d, The poisonous vegetable alkaloids, digitaline and atropine, in solution are likewise not absorbed into the skin, for a prolonged sojourn in a bath containing a strong dose of these substances, does not give rise to any symptoms of poisoning.

The Dialyzer.—The chief merit of the "dialyzer," or apparatus for effecting analysis by diffusion, is its extreme simplicity. It consists of nothing more than a species of sieve, having gutta-percha sides and a parchment bottom. When in use, it is floated in a basin of distilled water, and the substances under examination are thrown on it as on a filter, and then allowed to remain undisturbed for twenty-four hours. At the end of this time all the crystallizable salts will be found to have passed through the vegetable parchment bottom, while the organic matter is left behind. By this means, arsenious and metallic salts, strychnine, and other poisons, can be readily separated from organic solutions in medico-legal inquiries, without much loss of time, and entirely without much trouble.

An Englishman on French Hospital Treatment.—An old coachman, now of any age above eighty, a regular John Bull, sent me a pressing message one day to call in and see him, as he considered himself in a dying state. "What is the matter, George?" said I, on entering. "Oh, you may well ask what. Everything's the matter. I'm blind and deaf and dumb, and hard-by dead.—They've done it for me, they have." "Who?" said I. "Oh, them chaps, them d—d French hockilix (oculists?). I've been in a hospital, sir, with a strong weakness, sir, in this here heye, sir, as is hout, sir; and if you'd knowed, sir, the messes I have been made to eat, sir, you wouldn't have asked 'what,' I'm thinking. A morning, sir, soup—greasy water it was; eleven o'clock, beef—rags, sir, rags; evening, sir, more soup, more like in the morning. And if that then for seven long mouths aint enough to do for an English, with insides as is English, why then I don't know a horse from a donkey, sir." "Had you no wine?" replied I. "Oh, yes, sir, plenty of wine, plenty, and winegar was a joke to it. Oh, yes, plenty of wine, plenty;" and here my patient went into a melancholy chuckle. I believe poor old George had, in his own personal experience, stumbled against one of the real causes of the increased rate of mortality in the Paris hospitals.—*Lancet.*

Cause of Pyæmia.—In a discussion before the Medical Society of London, Mr. Henry Lee stated that of all the blood-poisons, none was so deleterious as decomposed fibrin. It will, he said, produce much more formidable symptoms than the introduction of any amount of healthy pus; and he believed secondary abscesses and typhoid symptoms were to be referred to this cause. Dr. Richardson thought that in cases of purulent inflammation it was a question, first, whether there was a preliminary stage in which pus was formed in an organ or tissue previous to the blood-poisoning, or, secondly, whether the change took place primarily in the blood? He did not believe in the absorption of pus, and considered that the change originated from within, and not from without, and that pus formed outside the circulation did not enter into the blood. The mere injection of healthy pus into the blood will not produce blood-poisoning. One drachm of pus, when thrown into the circulation, will not often affect a dog. He thought that in all probability pus was formed out of fibrin, and that the formation of abscesses was beneficial. Mr. Barwell remarked, that he did not believe that absorption of pus was a cause of purulent inflammation. A physiological society in Edinburgh had injected four ounces of healthy pus into the jugular vein of a donkey, and the animal recovered. The operation was repeated in a few months afterwards without any injurious results following.

Liquid Permanganate of Potash.—M. Leconte prepares this solution in the following manner: Caustic potash, six drachms; chlorate of potash, five drachms; binoxide of manganese, five drachms. Dissolve the caustic potash and the chlorate in a small quantity of water, and add the manganese; get rid of the water by evaporation, stirring constantly, and calcine the dry mass to a dark red for an hour in an untinned iron cup; allow to cool, and add a quart of plain water. Then boil for five minutes in a china capsule, and you will obtain a fluid of a slightly purplish tint; decant the solution, and wash the residue with such a quantity of water as to make altogether two quarts.—When filtering is thought necessary, the liquid should be passed, not through paper, but through very fine sand. For dressing foul wounds, or for injecting, use one drachm of this solution to from three drachms to five of spring water.

Case of Popliteal Aneurism cured by Digital Pressure.

By GEORGE SOUTHAUR, F. R. C. S.

The patient was in his thirty-third year, an iron-moulder by trade. From the man's account the disease did not appear to have been of more than nine or ten weeks' duration. The right popliteal space was distended by a pulsatile swelling, accompanied by severe pain and general œdema of the leg. The pulsation of the tumor was very perceptible, but feeble, and the skin over it slightly discolored. His countenance bore indications of severe suffering. Pulse 120, small and quick; appetite bad. So urgent did the case appear, that clamps were immediately applied over the femoral artery. The limb was enveloped in flannel bandages, and elevated on pillows; bottles of hot water were placed near, to raise the temperature of the foot and leg to the natural standard. The following day the clamps were removed, as they had produced redness and vesication of the skin. Iodide of potassium was now prescribed, and regularly taken for three weeks, with no apparent improvement. Digital compression was then resorted to, twelve students having volunteered their services. During the first twenty hours, this system of pressure was frequently interrupted, and therefore at the end of this period the pulsation had apparently undergone no change. Consequently two students were directed to be continually with the patient, one to compress the artery, the other to apply his hand over the aneurism to detect any insufficiency of the pressure. This plan was adopted for twenty-four hours; a very slight pulsation could then be felt in the tumor, and six hours later it had entirely subsided. Moderate pressure was, however, kept up for another day, and then discontinued, as there were no signs of any further pulsation. From this time the case proceeded very satisfactorily, the man leaving this hospital at the end of three months, with scarcely any remaining traces of the disease.

Mr. Southaur considers that pressure must now be regarded as the established system of treating aneurismal tumors whenever practicable; but the best mode of applying it is still a subject for discussion. In the present case the vitality of the limb was evidently too much impaired to admit of instrumental pressure; indeed, the unusual size of the tumor, the unsatisfactory condition of the surrounding parts, as well as the patient's general health, formed in themselves serious obstacles to any kind of operative interference. Many are the advantages of digital over instrumental compression. Not only does it seem to effect a cure in a shorter period of time, but with much less pain, and is not so likely to lead to sloughing of the structures under pressure, which with the greatest precaution is liable to occur in some cases. The flow of blood through the aneurism may not be sufficient by this means, and indeed this is not to be desired, as fibrillation of the blood is more likely to occur, and to be more permanent, if allowed to pass through the sac in small quantity and in a slow continuous stream; for digital compression is not liable to those sudden alternations in force and volume, which under instrumental pressure are apt to take place, in consequence of the tendency of the artery to escape from under the clamps on any slight movement of the limb. But pressure alone must not be entirely relied on in the treatment of aneurism; for as success depends on the consolidation and subsequent absorption of the blood in the tumor, other agents of similar properties, to combine with, must be sought for. The difficulty in arriving at correct views of the medical treatment of aneurism is probably owing to our imperfect knowledge of the changes which contribute to the solidification of the aneurismal contents.

The process is usually regarded as similar to the coagulation of the blood out of the body; but it is questionable if this be exactly

so where the solidified material is partially absorbed or converted into structure. Ordinary coagulation of the blood is one consequence of its diminished vitality, and therefore would more likely be followed by its removal from the body by ulceration and suppuration than by absorption. It seems, therefore, highly probable that the solidification of the blood within the body, previous to its absorption or conversion into tissue, differs somewhat at least from that of ordinary coagulation. This may explain how it is that low diet, which, by depressing the vital properties of the blood, should promote its coagulation, has not led to those salutary results expected by its advocates in the treatment of aneurism.

Treatment of Strabismus in the Royal Ophthalmic Hospital.

By GEORGE LAWSON, ESQ, F. R. C. S.

Much has been lately said and written on the treatment of strabismus, and different surgeons have laid claim to special operations for the remedy of this defect, urging that the method they suggest does away with many of the objections which are attributed to the subconjunctival operation.

Before, however, suggesting improvements upon the mode of performing an operation, it would be well if the author of every new method had a right appreciation of the proper way of performing the operation he seeks to supersede.

It has been stated and printed in a public journal, that some of the objections to the subconjunctival operation are, that the plica semilunaris is interfered with, and that the result is a shrinking and retraction of the caruncle. Again, it is urged that suppuration and large growths of granulations follow the operation, and add considerably to the after deformity.

To such statements I can only say that the writer of them either could never have seen the subconjunctival operation properly performed, or else must have witnessed results very different from those which are obtained at the hospital.

I would preface the remarks I have to make on this operation by stating that the plica semilunaris ought never to be interfered with; that the falling back of the caruncle is an exceedingly rare occurrence after the operation, and cannot follow unless improperly performed; and that suppuration of the wound and the after-formation of granulations in the site of the cut in the conjunctiva never occur.

I will now briefly describe the operation as described at the hospital.

The lids are kept apart by the ordinary wire speculum. The surgeon then makes a small opening in the conjunctiva with scissors, over the lower edge of the insertion of the rectus tendon, taking hold of the membrane, and often the deep fascia at the same time, with the forceps, which, if the eye be turned inwards, may be slid (closed) along the surface from the edge of the cornea till they reach the proper spot for the opening: thus the eye need not be held by an assistant. The fascia being opened, the lower edge of the tendon is exposed *close to its insertion*. If the fascia has not been opened at the first snip, it is in turn seized by the forceps at the same point and divided, without interference with any other structure; the object being simply to divide the tendon on the ocular side of the hook *at its insertion*. The blunt hook is now passed through the aperture in the subconjunctival fascia, and behind the tendon, which it renders tense by being made to draw on it slightly forwards and outwards. The next step is the introduction of the scissors. Mr. Bowman insists on the propriety of carefully introducing the points of the scissors, not much separated—one along the hook behind the tendon, the other in front of the tendon, and between it and the conjunctiva,

and of dividing the tendon by *successive snips* from the lower to the upper edge. If the tendon is divided by one cut, the operation is more roughly executed, for, as the blades have to be opened more widely, the opening in the conjunctiva and fascia must be larger, vessels of a larger size may be divided, and the tendon may be pushed off the hook before the points of the scissors; if this happen, of course the hook must be re-introduced. The surgeon completes the operation by making a small counter-puncture, by bulging the conjunctiva on the end of the hook in the situation of the upper border of the tendon after its division, and by then snipping it with the scissors; the object being to allow any of the effused blood immediately to escape, instead of diffusing itself over the sclerotic. The subsequent ecchymosis then never need extend beyond the seat of the operation, and should disappear within a few days.

The results of this operation, when properly performed, are so satisfactory that I feel any new method must possess very strong claims to justify its preference.

Before operating upon a patient for strabismus, the visual condition of the two eyes is to be ascertained, and the relative strength of the internal and external recti muscles made out. Mr. Bowman is very decided in urging the necessity of carefully estimating the comparative strength of these muscles in both eyes, as according to their relative power he determines upon the necessity of operating upon one or both eyes. He has adopted a set of symbols which indicate accurately their comparative state. The patient is made to look at a near object held at the extreme outer limit of his field of vision, first on one side, then on the other, and the extreme limit of movement of each eye inwards and outwards is then noted, with reference respectively to the lower punctum and the outer canthus; the pupil being the part of the eye used to mark the movement inwards; the outer edge of the cornea the movement outwards. In noting the case on paper, the diagrams of the positions of the two eyes should be placed on the same line, as if facing the observer; that of the right eye on the left hand side.

In each case the exact distance admits of being recorded. In this manner the relative strength of the internal and external recti may be estimated, and the result marked down in a single line, so as to show at a glance in which eye the preponderance of power of either muscle exists. After the operation another examination is made, and the result again marked down. We are thus enabled accurately to record on paper the amount of power the one muscle has gained and the loss the other has sustained by the operation, and this at successive periods in the history of each case.

Carbonic Acid in the Atmosphere.—At a sitting of the French Academy of Sciences, M. Mine read a paper on the quantity of carbonic acid in the air, showing that it does not exist in the same amount throughout the year. During December and January the quantity remains nearly the same; it increases in February, March, April and May, and diminishes during the months of June, July and August; after which it increases again from September to November, the maximum of the whole year occurring in October. During the night it is more abundant than in the day time. The maximum quantity during the day occurs at noon. After a shower it always experiences an increase.

Ergot of Wheat.—M. Leperdriel has proposed the employment of the ergot of wheat as a substitute for that of rye. The reasons for which, as assigned by him, are: 1st. It does not undergo decay or change very quickly. 2d. It contains 15 per cent. less of the poisonous resinous principle, and 20 per cent. more of the efficacious principle of the ergots.

Treatment of Malarious Fever by the Subcutaneous Injection of Quinine.—By W. J. MOORE, of the Bombay Medical Service.

Since the year 1858, when Dr. Wood brought forward the hypodermic method of administering morphia, the plan has been extensively tried. Moreover, the results following the injection of morphia into the subcutaneous areolar tissue have, on the whole, been satisfactory, and the use of the alkaloid in this manner has now become an established practice in various obstinate neuralgic disorders. Other agents, as atropia, have also been used hypodermically with varied success, and I have latterly employed a strong solution of quinine for the cure of intermittent and remittent fever by the method of subcutaneous injection.

The success which has attended the practice renders me desirous of calling attention to this novel mode of using quinine. I have so employed the remedy in upwards of thirty cases of intermittent fever, and in several cases of remittent, and with almost invariable success; the former class seldom requiring a second application, the latter generally subsiding after the fifth or sixth injection. Since the period I commenced to use quinine in this manner, I have been surprised and pleased to find in one of the medical periodicals, that the same plan has been pursued by Dr. Chasseaud, of Smyrna, who reports one hundred and fifty cures, and especially recommends the system in fever, complicated with gastric symptoms, when the exhibition of quinine by the mouth is often "inefficient, difficult and hazardous."

I use the strongest solution of quinine which can be prepared—viz: thirty grains of quinine, eight or ten drops of dilute sulphuric acid, and half an ounce of water. Of this I inject from half a drachm to a drachm, the former quantity containing some four grains of the active agent. With the exception of a little sulphate of soda, if the bowels are confined, I use no other remedy whatever in uncomplicated cases of any type of malarious fever. When the spleen is enlarged, or if a leucocythemic condition is present, I prescribe, as an additional curative agent, one or other of the preparations of iron—very frequently the citrate of iron and quinine.

I generally inject beneath the skin, over the outer belly of the triceps extensor muscle, and sometimes over the deltoid. I have, however, used the syringe with equal effect on the thigh and calf, and, in cases of enlarged spleen, have thought the action of the remedy increased by injecting over that organ. I use a small glass syringe, with the screw action, and furnished with a sharp silver point, some half an inch in length. The latter is introduced beneath the integument half an inch or less, and the pain is not greater than the prick of a pin. Indeed, patients have frequently declared that they would rather submit to this process than taste the bitter of quinine. I have never seen the slightest inflammation or irritation follow the operation except in two instances. In one of these the result was due to the instruments employed—namely, a small-trocar and common glass syringe; in the other, to quinine in *suspension* being used, instead of in *solution*. Indeed, I have reason to believe that quinine in suspension is very irritating to the tissues, and this is what physiology would lead us to expect, as it is certain that when a fluid material is introduced into the areolar structure, it will be absorbed more readily than any solid mass could be. Therefore, to avoid irritation of the parts, and, also to prevent "choking," I insist upon a perfectly clear solution of the alkaloid.

The best time to inject is shortly before the expected cold fit, but it may be done during the first stage with the effect of lessening, and sometimes stopping the whole paroxysm. Latterly, when a patient presents at the morning visit, who expects an accession during the day, I have injected at the time, and nearly invariably the fever has stopped.

In cases of remittent, I have endeavored to inject during the remission, but do not wait for this period. In severe cases the injection should be repeated at intervals of six or eight hours.

I believe four or five grains of quinine injected beneath the integument are equal in their effects to five or six times that amount taken into the stomach; also, that the effects are more certain than when taken in the ordinary method; and, also, that relapsing attacks are less common than when the remedy is administered by the mouth.

On Fractures.—By W. H. B. WINCHESTER, F. R. C. S.

There is no subject within the entire range of surgery on which so much has been written and yet so little real practical improvement made as that of fractures. A system so long and perseveringly followed as that on which the present treatment is based, but which has proved so barren of good results, may reasonably be suspected of embracing some radical defect both of principle and practice. It will not be amiss, therefore, to examine one or two of its leading features, for the purpose of discovering the cause and its remedy.

In the first place, with regard to Extension. The views entertained respecting it are so erroneous, that until they are entirely abandoned, no improvement can take place. Muscular contraction has been, and still is, the real bugbear. To counteract its supposed baneful influence, or, in other words, to keep up permanent extension, has been the chief object sought to be attained, and no combination of forces the ingenuity of mechanics could devise, has been considered too powerful to attempt its accomplishment. Look, for instance, at the powerful screws attached to the extremities of some instruments—at the railway splint of Professor Dumreicher, some time since used in St. Bartholomew's Hospital, by which the lower part of the splint, supporting and holding in its grasp the lower or separated portion of the limb, is so contrived as to run away with it to the utmost limit of muscular elasticity. Such, too, is the effect of attaching a heavy weight to a cord from the foot, and letting it run over a pulley at the end of the bedstead. A similar result also follows the application of the most commonly used of all splints—viz: Desault's long splint, and of all ordinary forms of apparatus. Extension, therefore, as at present understood and practised by the above means, is a persistently active, and as such an injurious, force. It can only be beneficial when temporarily employed to effect replacement. As soon as this is accomplished it ought to be superseded by the passive, enduring, and consequently beneficial force expressed by the term Retention.

Now, this much-dreaded muscular contraction, the involuntary result of fracture, hitherto considered so obstructive, discarded as even worse than useless, and opposed as injurious, is, if rightly understood, a natural power of inestimable value, supplying the exact amount of forcible contact between the broken surfaces necessary to excite healthy reparative action in the most speedy and perfect manner, accurately adjusted to the functional capacity of each individual case. That this view is correct, physiologically, pathologically, and mechanically, will undoubtedly be admitted. At least nine-tenths of the cases of ununited fractures, of tardy union and deformity, may be attributed to the misunderstanding, neglect, or overlooking of this obvious pathological effect of muscular contraction.

Paget, in the last edition of his admirable treatise on Surgical Pathology, when speaking of ununited fractures, (page 193,) remarks: "In other cases the failure seems to occur earlier. No reparative material is formed, and the fragments remain quite dis-

united. This may be the result of accidental hindrances of the normal reparative process; but it sometimes appears like a simple defect of formative power—a defect which, I believe, cannot be explained, and which seems the more remarkable when we observe the many changes which may at a later time be effected, as if to diminish the evil of want of union." Is not this its true solution or explanation—viz: that nature, not unequal to the task, has only been deprived by art of the very means which she has specially provided for its accomplishment? How is this provision of nature to be rendered available? By adopting the means I have frequently had occasion to describe—viz: the necessity of aiding and directing nature by suitable, and not retarding or obstructing her by improper forms of apparatus.

Case of Cirrhosis of the Liver in a Child Five Years Old.—M. C—, aged five years, came under Dr. Murray's care about three weeks before her death, complaining of severe pains in the abdomen, with bearing down, and passage of blood. On investigating her history, it was found that up to three years of age she had always been a very healthy child, when at this time she began to experience transitory pains in the abdomen, more especially in the hepatic region. At times these were so severe that the child could not tolerate them, and, though naturally patient, she screamed in agony. Soon afterwards she began to be affected with a sensation of bearing down, which caused her to go to stool very frequently. Her constitution began to give way, and from being strong and healthy she became pale and anæmic. The mother stated that she applied to several medical men, without, however, deriving any good. At this time no suspicion was entertained regarding the nature of the case. She continued in this chronic condition of ill-health, having the bearing down sensation and pain generally diffused over the abdomen, when the mother's attention was attracted by the child's passing blood at stool. She was then placed under Dr. Murray's care. On examination, the abdomen was found to be very much distended, but no fluctuation could be detected. The liver was hard and nodulated to the touch, and when pressed upon the child cried out; the feeling was exactly similar to that presented by a cirrhotic liver. To relieve the pain, warm fomentations were applied over the abdomen, and a few doses of Dover's powder given, which had the desired effect. About a fortnight after she was first seen the patient was attacked with severe hæmatemesis, when she vomited several pints of dark venous-looking clotted blood. A few doses of gallic acid, with cold cloths, and rest in the recumbent posture were ordered, which, for the time, had the effect of stopping the hemorrhage; but a few hours afterwards a second attack supervened, which resulted in the death of the child.

As a wish was expressed to have a post-mortem examination, the mother willingly complied with it. On making an incision through the abdominal parietes, the first object which presented itself was the liver, which was covered with nodules, varying in size from a hazel nut to a hen's egg. The parenchyma presented everywhere a granular character, and of a dense, firm, leathery consistence. The granulations varied in size from a pin's head to a linseed, and were separated by corresponding areolar tissue. The intestines were universally covered with ecchymosed spots, and from the rectum upwards were filled with masses and clots of dark venous-looking blood. The stomach also was packed full of clots. The whole surface of the mucous membrane, from the stomach downwards, was carefully washed and examined, but no lesion of any kind could be detected; thus proving that the blood was entirely passive in its origin, arising from the obstruction to the passage of the blood through the portal vein. The spleen was greatly

enlarged and much congested. No examination was made of the head.

Here was a case of distinct cirrhosis of the liver in a child only five years of age, which was not congenital, for she enjoyed good health till she was three years old, nor could any particular cause be assigned for it. The child herself had a peculiar repugnance to alcoholic stimulants of every kind. With regard to the parents themselves, they certainly were very intemperate in their habits. The records of children's complaints do not present a similar case in so young an individual.

On the Employment of the Alkaloid of the Calabar Bean in Prolapsus of the Iris.—Mr. Thomas Nunnally calls attention to the great advantage we may derive by availing ourselves of the undoubted power of the Calabar bean over the concentric fibres of the iris, by which, in the course of a few minutes, the pupil may be reduced in size to a mere speck, and the whole surface of the iris put upon the stretch; the direction of the force being from the circumference towards the centre of the membrane, precisely as is desired in the cases referred to.

There are few surgeons who do not know how frequently the cornea and anterior margin of the sclerotic are opened by punctured and incised wounds: in women and children by the point of a knife, scissors, knitting-needle, steel pen, and similar instruments; in men by the flying off of a splinter of metal, stone, or other hard brittle substance, in the varied mechanic works going on all over the country. And every surgeon also knows how unsatisfactory, in the result, most commonly such wounds are, occasioning great pain and distress, often tedious confinement and loss of health, and, at the best, in the great majority of cases, resulting in permanent impairment of the eye, more or less considerable, according to the extent of the prolapsus of the iris and the severity of the inflammation occasioned by it: a *perfect* cure being the exception rather than the rule.

Apart, however, from the protrusion of the iris, which almost invariably occurs whenever the cornea or the margin of the sclerotic is accidentally wounded, there is really no reason why these wounds should be so troublesome. Under favorable circumstances, wounds of these tissues heal rapidly. Punctured wounds of the cornea and sclerotic, when made by the surgeon, almost invariably heal at once, and not unfrequently the large corneal incision made in extraction of the lens is healed in twenty-four hours. Now, as in the great majority of cases the instrument by which these accidental wounds are inflicted is small and sharp, these are incised wounds in their character; and thus there does not appear to be any reason why, if the iris could only be kept from prolapsing, they should not heal as readily. Of course, where, as sometimes happens, the offending substance is large and the impelling force considerable, the coats of the eye are lacerated, and the whole ball is contused; but, even in these cases, if the lens be neither wounded nor displaced, so highly organized is the ball, and so great its reparative power, that I am convinced, could the iris only be kept in its normal situation, and the lips of the wound in the cornea and sclerotic be kept in contact, many eyes which are now lost would be saved, and the patients escape great and prolonged suffering.

Many plans have been suggested for disengaging the prolapsed iris, which, though occasionally successful, far more commonly fail. It occurred to me that if the iris could be kept for some hours on the full stretch, by the almost entire contraction of the pupil, it would not prolapse, and thus the corneal wound might heal by the first intention. The result of two cases in which I have employed the

alkaloid (for such I presume it to be) of the Calabar bean is most satisfactory, and would quite justify the belief that if the case be seen immediately after the infliction of the injury, before prolapsus has taken place, or, even though this has happened, before adhesion has occurred, the iris may be kept out of the wound, and this will then heal as after a surgical wound.

Poisonous Snake Bites.—Dr. Shaw, of New South Wales, states that a short time since he was requested to visit a young man who had been bitten on the arm by a black snake, one of the most deadly of the Australian varieties. As the patient lived a few miles from his residence, it was nearly two hours from the time of the accident till he saw him. Upon arriving, he found him in a very low condition; his countenance very pale and listless; body bedewed with a cold perspiration; the pulse small, rapid and fluttering, with great drowsiness and disinclination to speak or to answer questions. A ligature had been applied by a neighbor, above the wound, shortly after the injury. The doctor seized the bitten part with forceps, and cleanly excised it and around it to the extent in size of a shilling. Pretty free bleeding occurred, which was further encouraged by getting the lad's father to suck the wound with the mouth. The sucking being continued for about ten minutes, he then applied a strong solution of ammonia to the wound, and, at the same time, gave a draught, consisting of two drachms of aromatic spirit of ammonia, and the same quantity of tincture of assafoetida in a little water, and this he ordered to be repeated every hour, with strong coffee *ad libitum*. Soon after these measures were adopted, and especially after the administration of the draught, he appeared to revive, and continued to do so well, that in three hours from the time of the visit he was considered completely out of danger.

In the treatment of this case, no originality is claimed, with the exception of the administration of tincture of assafoetida, and for that hint he was indebted to Dr. Frances Cambell, of N. S. W., Dr. C. appears to look upon the tincture of assafoetida as almost a specific in snake bites, and certainly the result of cases he adduces which were treated by that medicine would almost warrant one to endorse his opinion. The probability is, however, that it owes its properties in such cases more to its action as a stimulant, and perhaps, also in part to its bad taste and odour, rousing, to a certain extent, the depressed nervous energy of the sufferers from that species of poison.

Dr. Berncastle, of Sydney, another gentleman who has paid particular attention to snake bites, considers stimulants the great *forte* in the treatment of such cases; and although he advocates the propriety of local treatment, still he appears to say that it is of less importance than the administration of large doses of some diffusible stimulant, he giving the preference to whiskey.

The rational course of treatment, then, appears to be to get rid of the poison by excision or free scarification of the wounded part, and by propping up the depressed powers of life by diffusible stimulants of any kind till the shock—always an attendant of snake bites—is recovered from.

Rare Case of Tetanus.—A boy died at St. Bartholomew's Hospital from slight injuries and a scratch received on the nose, terminating in tetanus. The injuries were caused by the attempt being made to strike him with a board, which unfortunately caught his nose and grazed it. The wound went on very well for a while, he became worse, all the symptoms of tetanus set in, and he died.

Effects of Tobacco.—In a paper read before the National Association for the Promotion of Social Science, Dr. Richardson comes to the following conclusions, in which every position has been founded upon individual research:

1. The effects that result from smoking are due to different agents imbibed by the smoker—viz: carbonic acid, ammonia, nicotine, a volatile empyreumatic substance, and a bitter extract. The more common effects are traceable to the carbonic acid and ammonia; the rarer and more severe to the nicotine, the empyreumatic substance, and the extract.

2. The effects produced are very transitory, the poison finding a ready exit from the body.

3. All the evils of smoking are functional in character; and no confirmed smoker can ever be said, so long as he indulges in the habit, to be well. But it does not follow that he is becoming the subject of organic and fatal disease because he smokes!

4. Smoking produces disturbances in the blood, of the stomach, of the heart, of the organs of sense, of the brain, of the nervous filaments and sympathetic or organic nerves, of the mucous membrane of the mouth, and of the bronchial surface of the lungs.

5. The statements to the effect that tobacco-smoke causes specific diseases—such as insanity, epilepsy, St. Vitus' dance, apoplexy, organic disease of the heart, cancer and consumption—have been made without any sufficient evidence or reference to facts. All such statements are devoid of truth, and can never accomplish the object which those who propose them have in view.

6. As the human body is maintained alive and in full vigor by its capacity within certain well-defined limits to absorb and apply oxygen, as the process of oxydation is most *active and most required* in those periods of life when the structures of the body are attaining their full development, and as tobacco-smoke possesses the power of arresting such oxydation, the habit of smoking is deleterious to the young.

7. In the main, smoking is a luxury which any nation of moral habits would be better without. The luxury is not directly fatal to life, but its use conveys to the mind of the man who looks upon it calmly, the unmistakable idea of physical detriment.

8. But as a luxury, tending to this condition, it is probably one of the least hurtful of luxuries. It is on this ground, in fact, that tobacco holds so firm a position: that of nearly every luxury it is the least injurious. It is innocuous as compared with alcohol; it does infinitely less harm than sugar (?); it is in no sense worse than tea; and, by the side of high living, altogether it contrasts most favorably. It is most antidotal to gluttony.

9. Tobacco may also be considered, in certain cases, as a remedy for evils that lie deeper than its own, and as such a remedy, it will persist in holding its place until those evils be removed.

Hydrophobia Eleven Months after the Bite of a Rabid Dog.—M. Dupuy, of Lyons, lately mentioned before the Society of Medical Sciences of that city, the case of a young lady, sixteen years of age, who was bitten by a dog which had given signs of hydrophobia. The patient had with her a favorite dog, which was attacked by the rabid animal, and whilst trying to save her own dog, the girl was severely bitten in the hand. The wounds, which bled rather freely, were not regularly dressed, and soon cicatrized. Some suspicions were afterwards entertained, and the girl had, probably from fear, hysterical attacks, which M. Dupuy states were not rabid fits. A journey was then undertaken, and all fears soon vanished, until eleven months had elapsed since the accident. At that period the young lady was seized with unmistakable signs of hydrophobia, and died in a few days.

Calabar Bean as a Neutralizer of Atropine.—A thorough and satisfactory examination of the retina and choroid, such as is often needed for a proper knowledge and conscientious treatment of diseases of the internal tissues and humor of the eyeball, cannot be effected without dilating the pupil, so as to increase the number of rays which enter and illuminate the eyeball, and to enlarge the field of observation. If the pupil be left dilated and the accommodation effected by atropine, as has hitherto been inevitably the case after its employment for ophthalmoscopic purposes, the patient suffers considerable inconvenience for a time from the inequality of the visual powers of the two eyes. Hence, too, he is often led to believe that the surgeon has inflicted some actual injury, and permanently damaged his sight, by the harmless process of dilatation; and many a patient suffering from progressive amblyopia, absurdly enough, yet from a comprehensible error, ascribes the date of visible progress of his disease to the date of the temporary dilatation of the pupil, with its attendant obvious inconveniences. It is desirable to avoid misconceptions in practice, especially when patients are not sufficiently intelligent to understand the harmless nature of the temporary dilatation of the pupil by a drop of a weak solution of atropine. It had very early been obvious that the Calabar bean might probably furnish an active principle which might be safely and innocently employed to counteract the dilatation produced by atropine. Mr. Ernest Hart employed the beans experimentally for this purpose. It was at once obvious, from the first series of observations, that the bean fully possessed the power ascribed to it; but the best mode of employing it, the means of adjusting its application so as not to carry the effects too far, could not at once be determined. The most convenient method, for ordinary purposes, is by saturating with the extract thin paper, so adjusting the strength of the solution that equal portions of the Calabar bean paper and atropine paper might be made to neutralize each other, and leave the eye, after ophthalmoscopic examination, as nearly as possible in *statu quo*. The nearest approach to this object is attained by paper prepared according to the following formula: One ounce of the white portion of the bean is exhausted by two ounces of rectified spirit; the solution is now evaporated to one-eighth of its bulk, and then the paper is soaked in it and dried. We may add, in reference to atropine paper, that it is so prepared in London that a piece one-fifth of an inch square contains as much atropine as one drop of a two grain solution to the ounce.

Investigations Touching the Use of Iodine.—Dr. Rosenthal, assistant physician at the Vienna General Hospital, has published, in the *Weiner Med. Wochenschr.*, a series of papers containing much original matter touching the therapeutic use of iodine. The summing up is as follows:

1. Large doses of iodide of potassium, combined with a small quantity of fluid, remain a long time in the economy; with large quantities of fluid, they are quickly washed away from the system, and pass rapidly into the secretions and excretions. This circumstance should be carefully noticed.

2. When iodide potassium is taken internally, it is found, not only in the urine, saliva, and other secretions, but also in the alvine evacuations, within from four to seven hours, whether the stools be aqueous or the reverse.

3. In the administration of iodide of iron, iodine is separated in considerable quantities and found with a large proportion of the iron in the urine. Faecal matter contains much iron and a small amount of iodine. The same phenomena may be noticed when iodide of mercury is used.

4. Frictions with an ointment containing iodide of potassium upon sound skin will cause the iodine to be detected in the urine and saliva.

5. Iodine is found in the urine of those who take baths in which iodide of potassium is dissolved, even when the rectum and urethra are kept free from the action of the bath. This is proved by examining the urine, and by noticing a large diminution of the iodine in the water used for the bath.

6. The intestinal mucous membrane takes up the iodine very energetically in the form of enemata, and this is the case even with very weak solutions of iodide of potassium.

7. Large doses of iodide of potassium, or small doses taken for a long time, are not well borne in certain pathological states of the economy; in fact large doses of iodine, or concentrated solutions, are very prejudicial to the system.

Whooping-Cough treated with Bromide of Ammonium.

Dr. Harley says of this remedy:—"It must still be fresh in the memory of our readers, that Dr. Gibb discovered in the bromide of ammonium a most valuable pharyngeal and laryngeal anæsthetic;" and it is this special character of the remedy which Dr. Harley has endeavored to turn to useful practical account in the treatment of pertussis. He remarks—"During the last six months a very great number of children have suffered from whooping-cough; and every general practitioner, as well as hospital physician, knows that the success in the treatment of this troublesome affection has not at all been in proportion to our experience of the disease. Indeed, there are few diseases the diagnosis of which is so easy, the pathology so obscure, and the treatment so uncertain, as those of common whooping-cough. Specifics in abundance have been at various times proposed; but one after another, after a year or two's trial, has gradually fallen into disrepute. Although the pathology of whooping-cough is still very obscure, one thing is evident—namely, that the exciting cause of the whoop is the reflex irritation of the branches of the pneumogastric nerves. The pneumogastric nerves supply the glottis by means of their recurrent, the lungs by their pulmonary, the stomach by their gastric, and the diaphragm by their diaphragmatic branches; and let the nerve irritation originate where it may, one thing at least is clear—namely, that the immediate result is spasmodic action of all the parts supplied by the vagi. Thus it is we have the violent expulsive cough, followed by the spasmodic constriction of the glottis, impeding the free return of air to the lungs, and thereby producing the peculiar sound from which the disease takes its name. Next we have the spasmodic action of the stomach, inducing vomiting, and that again is aided by the convulsive contractions of the diaphragmatic muscles." Such being Dr. Harley's views, his object in giving bromide of ammonium was to induce, if not semi-paralysis, at least partial insensibility, of the glottis, and thereby, if possible, prevent the occurrence of the spasm, which is undoubtedly the chief source of misery during the attack. With regard to the dose: for infants, two or three grains three times a day are enough; to older children, from four to eight grains may be given, and in some cases, where the symptoms are remarkably severe, even ten grains. The simpler the vehicle the better, but if there is a tendency to bronchial or pneumonic inflammation it should be combined with either a mixture or the wine of ipecac. The special nervous symptoms seem to be more under the special control of the drug than the catarrhal, for the spasms diminish in frequency and severity, and consequently the whoop is not so often heard, showing a subsidence of the active symptoms. Dr. Gibb says that, *pari passu*, the cure is not more speedy than from the dilute nitric acid in uncomplicated cases; nevertheless, it is worthy of a more extended trial, especially in severe and obstinate cases.

Case of Copper Colic—Third Attack; Purple Line around the Gums; Recovery.—As it is only a few years since cases of copper colic attracted the attention of medical men, and as they are still, comparatively speaking, rare, the following instance will be read with interest. Charles S—, aged eighteen, a copper-plate printer, was admitted on the third of July into University College Hospital, complaining of severe colic. He stated that while sitting reading on the previous evening, he was suddenly attacked with acute pain in the abdomen; he felt "just as if some one had struck him violently in the belly." The pain, which he described as "a dead pain, increasing every now and then," lasted fourteen hours. The pain was not relieved on pressure; on the contrary, it was increased by it. He had no diarrhoea, nor was he costive; the bowels were moved once daily. He said that he felt very sick. Had a peculiar sallow, almost clay-colored complexion, and an anxious expression. The lips were livid, and the eyes sunken. The tongue was tolerably clean, but round the gums there was the characteristic purple line of copper poisoning. The line had not the slate-grey hue of lead, nor was there any constipation as in lead colic. On inquiring into his history it appeared that he had followed the occupation of a copper-plate printer for the last two years. He cleans the plates with a leather, and latterly he has had to clean some old copper-plates which had lain by for a long time. While cleaning them he found "a good deal of greenish dust rose like verdigris," which he had to inhale. It also appeared that he had had two similar attacks before this—the first in October, which lasted a fortnight, the other a month ago, which lasted only three days. In order to induce the elimination of the poison from the system as rapidly as possible, the following medicine was ordered to be taken three times a day:—Spirits of nitric ether, a drachm; dilute sulphuric acid, ten minims; sulphate of magnesia, a drachm; laudanum, six minims, in camphor water. Under the use of this remedy he was dismissed cured in seven days, but with the line on the gums still distinct.—*Lancet*.

Death-Rate in Small Pox.—Mr. Marson, the resident surgeon of the Small Pox and Vaccination Hospital at Highgate, states that of unvaccinated persons who are attacked 36 per cent. die, whilst of those attacked after vaccination the mortality is 6.76 per cent., or 1 in 15. And, further, that if after the operation there remains permanently on the arm but one scar, the mortality is 7.57 per cent.; if two scars, 4.13 per cent.; if three, 1.85 per cent.; and if four scars remain the mortality is reduced to 0.74 per cent. Facts like these, backed by the experience of a man like Mr. Marson, ought surely be sufficient to silence, if not convince, the rabid opponents of vaccination. We should have been glad to learn from a gentleman of the unusual experience of Mr. Marson the influence which revaccination exercises upon the occurrence and fatality of small pox. What is the real influence of secondary vaccination? At what period should it be performed? Is it necessary immediately after puberty or at the termination of every seventh year? These are questions of vital import, and no doubt Mr. Marson will feel it his duty to give an answer to them. Without anticipating his reply, we may state that in a practice of no inconsiderable extent not a single case of small pox has occurred after revaccination. There is no question in which the public are interested that has a more important bearing upon the general welfare than this. There is none, probably, upon which there is a greater diversity of opinion. The records of the small pox hospital, we think, ought to afford something like a satisfactory answer. It would be greatly conducive to a settlement of this question if Mr. Marson would state his experience upon this point. No man is more competent by his long experience, and by the unbiased judgment which he can give upon such a matter, to relieve the anxiety of the public upon a disputed question than the highly respected resident surgeon of the Small Pox and Vaccination Hospital.—*Lancet*.

Artificial Formation of Fibrin.—In a paper read by Mr. A. Smee, before the Royal Society, he showed that if a stream of oxygen gas be passed through albumen, derived from the serum of the blood, or eggs, or gluten of wheat, portions of it become converted into fibrin. If, however, a small quantity of potash be introduced, fibrin is not formed. It has been thought that the discovery may throw some light on the phenomena of fibrinous diseases, as phthisis and peritonitis, and on the use of potash in their treatment. Dr. Shettle states that albumen can be readily converted into beautiful specimens of fibrin. He immersed some zinc and copper plates in pure albumen, obtained from the white of egg, and also some in a solution of albumen, in distilled water, such solution previous to insertion of plates having been filtered through a double fold of blotting paper. In both instances most satisfactory results were obtained, the albumen coagulating on the zincode, and under the microscope, exhibiting perfect specimens of fibrin, as well as granular cells. These experiments were made from a belief previously entertained that the coagulation of blood was due to electric action—a belief strengthened by the fact that the author had previously detected evidences of electricity in arterial blood by means of DuBois Raymond's galvanometer. He is therefore disposed to believe the theory, that the conversion of albumen into fibrin is not due to the direct effect of oxygen gas, but to electric action, set up by the union of oxygen with some one or other of the proximate principles of albumen; and this view, he considers, is confirmed by the opinion of Dr. Ireland on the "Influences of Ozonized Air on Animals." Dr. Shettle has been conducting other experiments on the same principle, by acting on a dilute solution of the sap of various kinds of vegetable structure, which also, under the electric influence, has been converted into perfect specimens of tissue, in every respect resembling the structure of the plant from which the sap was taken.

Iridectomy.—Iridectomy is an operation for the removal or cutting away of a portion of the iris. The derivation of the term is from two Greek words. The operation is performed as follows:—The patient being placed on his back on a table or bed, the surgeon, standing at his head, makes an incision into the margin of the cornea for about one-fourth of its circumference, by entering either a Wenzel or lancet-shaped knife on its flat, and carrying the point to the opposite side, close in front of the iris, but carefully avoiding it and the lens. As the knife is withdrawn, the aqueous humour gushes out, and frequently a portion of the iris with it, through the wound, in which case it (the iris) is to be seized by forceps, and carefully cut through from its pupillary to its ciliary margin on either side of the forceps with scissors, and the portion thus cut through removed by tearing it away from its ciliary attachment. When the iris does not follow the aqueous humour through the wound, it is to be drawn out by forceps, care being taken not to injure the lens, and the operation is then completed as in the other case. The quantity of iris removed should be about one-sixth. If there be much bleeding into the anterior chamber during the operation, it will be better to remove the blood by means of a fine scoop before the eye is closed and bandages are applied.

Phosphorous and Yellow Fever.—In examining several of the points connected with yellow fever and its supposed causes, M. Melier calls attention to a fact which is highly interesting and suggestive—namely, that the malady more generally rages in those parts round which the phosphorescence of the sea is most prevalent. M. Melier likewise points out a fact first noticed by M. Lancereaux—namely, that the pathological lesions observed in yellow fever are exactly those of phosphoric poisoning, and that the greater part of those persons who have died from the baneful effects of phosphorous, have presented the very condition of liver considered as characteristic of yellow fever.

Case of Transposition of the Great Vessels of the Heart. By JOHN COCKLE, M. D.—The subject of the case was a boy, who lived to the age of two years and eight months. He was born at the full period, perfectly healthy, and remained so until the end of the third month. He now became cyanosed, and suffered from cough and dyspnoea. His lower limbs were always weak; he was also very sensitive to cold. Under emotion the cyanotic tint darkened, and the dyspnoea and habitually increased impulse of the heart would be still farther increased. No convulsions, however, occurred. The child was remarkable for unusual intelligence. Eventually he lost flesh and became dropsical and covered with petechiæ, and died apparently from exhaustion.

The heart was found dilated and hypertrophied. The aorta arose from the right ventricle, and divided into its ordinary branches. The pulmonary artery, with its valves very large, arose from the left ventricle, and normally divided. The ductus arteriosus was perfectly closed. Foramen ovale largely patent. Septum ventriculare perfect. The various orifices and valves healthy. The mitral valve, however, was, as it were, tricuspid. The left lung was in part unexpanded.

The author finds that the number of cases of transposition recorded amounts to about thirty-two. Only three cases, however, are on record, in which the foramen ovale was alone patent, the arterial duct being closed, and the ventricular septum entire. In such cases, were it not that some interchange of blood occurred through the foramen ovale, two perfectly distinct circulating systems would have existed. No other vessels certainly compensated in this case.

Dysmenorrhœa and Sterility.—Before the Obstetrical Society of London, Dr. Greenhalgh read a paper on the importance, frequency and close connection of these affections, and directed the attention of the Fellows to the treatment of mechanical dysmenorrhœa, which a large experience had convinced him was by far the most frequent form of this complaint. Having compared the relative merits of dilatation and division of the os and cervix uteri in this affection, he expressed a decided preference in favor of the latter mode, for the safe performance of which operation he had invented an instrument, which he proposed to call the "bilateral metrotome." He stated that he had used this instrument in upwards of thirty cases, without a single casualty, and in the great majority with the best results. After giving a description of this metrotome to the Society, together with a brief summary of the cases acted upon, and enumerating the affections in which he had found the division of the os and cervix uteri most serviceable, he pointed out the necessity of attending to the pathological states of the uterus, frequently induced by the persistence of dysmenorrhœa, and concluded by giving a short account of the plan and remedies which he had found most beneficial for the cure of these several conditions.

Nascent Carbonate of Iron.—Messrs. Garnier and Lamoureux, says the *Gazette des Hôpitaux*, make granules of one-fifth of a grain of sulphate of iron, which are then coated with sugar. These granules are subsequently surrounded by a layer of bicarbonate of soda, and a second coating of sugar is applied. The two salts thus separated have no action upon each other as long as they are kept dry. On reaching the stomach, the granule dissolves, and carbonate of iron and sulphate of soda are formed. The gastric juice acts at once upon the carbonate of iron at the very time of the formation of the salt, and the small amount of sulphate of soda has a tendency to counteract the constipating effect of the steel. The number of granules taken at the beginning of a meal, vary from five to thirty.

Action of Solar Rays on Exposed Intestines.—At a meeting of the Academy of Medicine of Paris, M. Sappey read a report on a case of severe wound of the abdomen. The patient was a shepherd boy, aged eleven, who was gored by a bull, and to such an extent that the stomach, spleen, and a large portion of the intestines were protruding. Being far from any help, the poor boy lay for two hours with the viscera just mentioned exposed to the action of the broiling sun. Dr. Patry found the patient in this pitiable state, and, by dint of care and perseverance, the boy recovered. His medical attendant seized, however, upon this opportunity, to watch the mechanism of vomiting, and found that the phenomena succeeded each other in the following manner: Contraction of the diaphragm—vermicular contraction of the stomach, commencing at the pylorus and running from the latter to the cardiac orifice, forcing the liquids contained in the stomach towards the œsophageal opening—energetic contraction of the œsophagus—involution of the stomach at every effort—dilatation of the cardia under the influence of the longitudinal fibres of the œsophagus—finally, filling of the latter canal by the liquids coming from the stomach, and vomiting.

Discovery of a Medical Papyrus at Thebes.—Mr. A. Leith Adams, of Malta, describes a medical papyrus discovered at Thebes, which is written in a demotic character, and contains a discourse on boils (ulcers,) fractures, and wounds on the head in general, with aphorisms, prognostics, and an oath or prayer to be used by the physician in attendance on the sick, the whole being somewhat after the style of the Hipocratic writings and the early Grecian school of medicine.

Iodine, Bromine, Chlorine.—In a note to the Academy of Sciences, M. Alexandre de la Roche draws attention to the great resemblance in the chemical behaviour of the three principles—iodine, bromine, and chlorine; and to the probability of their being compounds of a common base. All three, he remarks, have a great affinity for hydrogen, forming acids with nearly identical properties, yielding white vapours when placed in contact with air, being exceedingly soluble in water, acting in the same manner upon vegetable substances, and being generally found in combination with sodium. He likewise deems it probable that both selenium and sulphur are similarly allied.

Jacob's Ladder.—In his eulogium delivered on the late Geoffrey de St. Hilaire, M. Drouyn de l'Huys says: "It was undoubtedly the love of his fellows which led Geoffroy St. Hilaire into the path in which we have followed him; we owe it to his memory to continue his work. May the master minds of science march at our head, and pursue through his initiative that work of ages which brings the intelligence of man in contact with the eternal truth! Science is that mysterious ladder on which Jacob saw, while dreaming, angels ascending and descending to convey heavenwards the aspirations of earth, and to convey back to earth the benedictions of Heaven." (!)

Iodized Oil.—M. Personne, Chief Apothecary of the Pitié, has just written a little work detailing the results of experiments undertaken with the view of testing the relative value of iodized oil and cod-liver oil in the treatment of scrofulous and other cathectic maladies. The facts are striking, and well-supported by proper names of most respectable authority. The cod henceforth will have little else to do than hide his diminished liver.

M. Sperino's Treatment of Lenticular Cataract.—It would appear from a letter of M. Sperino to the *Gaz. Med.* of Turin, that he has succeeded in several cases in rendering the opaque lens transparent after a certain time, by daily evacuating the aqueous humour. M. Sperino says that he will soon publish his cases.

Alkalies in Rheumatism.—Dr. Furnivall urges strongly on his medical brethren the propriety of treating all cases of rheumatism with alkalies, as essential to the prevention of cardiac sequelæ. He states that he believes there is some abnormal alteration of the blood, of acid tendency, only to be counteracted by alkalies. Dr. Wright, of Birmingham, tried the alkaline plan largely in rheumatism, and gave us a very favorable account of the results. Since then the agency of lactic acid in causing rheumatic cardiac disease and deposits has been proved.

ARMY MEDICAL INTELLIGENCE—OFFICIAL.

LIST OF MEDICAL PURVEYORS, C. S. ARMY.

Surgeon E. W. Johns, C. S. A.	Richmond, Va.
" J. S. Johnson, P. A. C. S.	Charlotte, N. C.
" J. J. Chisolm, "	Columbia, S. C.
" W. H. Priolean, "	Macon, Ga.
" G. S. Blackie, "	Angusta, Ga.
" W. H. Anderson, "	Montgomery, Ala.
" R. Miller, "	Mobile, Ala.
" R. Potts, "	Montgomery, Ala.
" R. K. Taylor, "	Lynchburg, Va.
" J. E. A. Davidson, "	Quincy, Fla.
" H. P. Howard, "	San Antonio, Texas.
" J. P. Bond, "	Camden, Ark.
" H. Stockdell, "	Wilmington, N. C.
" W. H. Geddings, "	Army of N. Virginia.
" W. C. Boon, "	Bonham, Texas.
" R. M. Sutfield, "	Columbus, Ga.
" John Clopton, "	Danville, Va.
" Howard Smith, "	Houston, Texas.
" E. H. C. Bailey, "	Demopolis, Ala.
" Thos. Liming, "	Charleston, S. C.
" J. W. Hines, "	Richmond, Va.
" Bushrod Taylor, "	Army of Valley Dist.
Ass't Surg. R. Q. Stoney, "	Savannah, Ga.
" W. Morrow, "	Army of Tennessee.
" W. B. Robertson, "	Wytheville, Va.
" J. C. Stickney, "	Columbus, Ga.
" Z. B. Herndon, "	Lake City, Fla.
" J. F. Young, "	Columbus, Ga.
" W. H. Baldwin, "	Houston, Texas.
" P. J. Johnson, "	Alexandria, La.
" H. C. Rogers, "	Shreveport, La.
" E. Cross, "	Doaksville, C. N.

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ORIGINAL COMMUNICATIONS.

ART. I.—*Dry-Cupping as an Excito-Secretory Remedial Agent.* By B. H. WASHINGTON, Acting Surgeon.

About thirty years ago, Dr. J. V. Prather, subsequently Professor of Surgery in the St. Louis Medical University, came to the conclusion that he could control the secretions from all the various organs of the system by dry-cupping on the spinal column, and having permanently added that remedial agent to his armamentarium, wrought many surprising cures. He found, however, that a great metaphysician spoke truly, when he said, "high truths, like high mountains, are apt to veil themselves in clouds," and as the admirable work of Dr. H. F. Campbell had not dispelled the clouds then surrounding the excito-secretory system, Dr. Prather could not give a satisfactory rationale for his procedure, but could only dogmatically affirm that he could control the secretions by dry-cupping. His medical confreres were not content to take his affirmation, but laughed immoderately and often at "Prather's hobby," and paid comparatively little attention to the subject. Having been duly instructed by Dr. P., while attending the lectures in St. Louis, we have practised as he did, for nearly twenty years, (though not actively engaged all that time in the practice), and our contributions to the medical journals, recommending dry-cupping, have met with far more favor than we had any reason to anticipate.

Now, however, since Dr. Campbell has dispelled the clouds surrounding the excito-secretory system, we have concluded to present dry-cupping as it truly is, a most powerful excito-secretory remedial agent, humbly hoping for a more favorable and general assent to the correctness of our propositions than that hitherto accorded us. We shall first present the cases, abridged as much as practicable, and then the logical deductions to be drawn from them, guided by the expositions of Dr. Campbell, and we are confident a much larger number of readers will cheerfully acquiesce in their correctness than when dogmatically presented in by-gone days.

Case 1.—Mrs. Y., Logan county, Ky., 1848. She had suffered for seven months from intermittent fever, though one of the best physicians in the state had been in attendance on her. We called on the physician, and having ascertained his plan of treatment, returned and used precisely the same

treatment to a single grain, but added on dry-cupping, and sponging the whole surface with hot water every alternate night. This we did because we knew dry-cupping to be the most powerful tonic and alterative agent yet presented to the profession. Such a thorough cure was made that Mrs. Y. never had another chill during the four years she lived after this occurrence.

This case is not, however, introduced merely to show that obstinate cases of intermittent can be cured by dry-cupping, but for a remarkable coincident cure effected, and which was truly surprising. When we took charge of her case, Mrs. Y. also informed us that she had been afflicted with tetter on her leg for thirty years, and that many physicians had prescribed for her in vain. As this was the first case we had in that neighborhood, and we were anxious not to have an unfortunate result, we concluded to stave off the treatment of the tetter, for we had no idea a cure could be effected. We, therefore, told her we would wait until she was cured of the chills before we did anything for the tetter, and determined to examine the medical journals and late works in the meanwhile, to ascertain whether we could find anything not likely to have been tried by any one of the aforesaid physicians. We looked over the journals in vain; not a thing could we find presenting any probability of effecting a cure. Time rolled on, and as Mrs. Y. said nothing to us concerning the tetter, we took good care not to allude to it to her. Some five or six months afterwards, we heard her boasting of her fine health: "Yes," said we, "and you owe that to dry-cupping." "Well, then," replied she, "it must be the dry-cupping that has cured my leg, for it is healed over as smoothly as the other." This was joyful news to us, and we determined to profit by it.

The dry-cupping in this case was continued about four months.

Case 2.—The next day after the above mentioned conversation with Mrs. Y., we determined to ascertain with certainty whether the cure of the tetter was merely a remarkable coincidence, or whether it was a legitimate result of the dry-cupping; so we rode over to Mrs. H., a neighbor, living some two miles distant, who had been troubled with tetter on her hands for twenty years. We related to her how Mrs. Y. had been cured, but found her much like some of Dr. Prather's confreres, so hard-headed we could beat no faith in the remedy into her at all. She, however, promised to try the

dry-cupping faithfully, if we would get up a liniment for rubbing on her hands. To this we readily assented, determining to furnish her with something that would do neither good nor harm; we accordingly colored some lard and carried it to her, and having instructed her daughter how to dry-cup her, awaited the result with anxiety. After about four or five months dry-cupping and the use of the colored lard, she showed me her hands, all smoothly and softly healed over. These cases demonstrated, beyond a shadow of doubt, the truth of a proposition presented by Dr. Prather, that dry-cupping was the most powerful alterative known. These cases prepared the way for the cure of

Case 3.—About two months after marriage, my wife was attacked with sick headache, and informed me she had been subject to such attacks all her life. We immediately commenced dry-cupping, and kept it up faithfully for five or six months, and she never had another attack of sick headache for ten years. At the expiration of that time, having accidentally combined dinner and supper together, she ate imprudently of indigestible food, and had a severe attack next day. We again tried the dry-cupping. In the course of a few weeks she had two light attacks, but perseverance soon effected another cure, and she has had none since—now about six years.

Case 4.—E. P., æt. 7, daughter of Mr. H. Porter, Todd county, Kentucky, found her suffering terribly with sequelæ of scarlatina; both steam and regular practice had been tried in her case, without success, and, almost without hope, her father called us in. Pulse 125; tongue dry in the middle; a little moisture around the edges; there was an abscess on one side of her neck about the size of a turkey egg, and on the other side one about the size of a hen egg; also a large abscess on her right hand, her right arm paralysed; her right leg affected with a severe sciatic pain from the hip to the knee, and so excessively tender she could scarcely bear a sheet on it; skin dry, harsh and scaly, the usual process of desquamation having been suspended, leaving the whole surface covered with a dry, thickened epidermis; complete aphonia—lungs and abdominal viscera in fair order. She was taking stimulants under the direction of one of the best physicians in the country; directed a continuance of treatment, and directed her to be well sponged with hot water every six hours, and, as her throat appeared to be very highly inflamed, directed a cold wet bandage to be applied, with a dry one outside. Calling a few hours later, during the exacerbation of her fever, found the pulse 160, and all the symptoms aggravated. The cold bandage to her throat had afforded no relief; ordered a hot one to be applied, and also to be applied to her hand. We immediately rode off to Elkton to consult an old physician, as we had been practising but a few months, and had never read of such a case in four years' reading. We were advised to give brandy and a little quinine, and the opinion was expressed that if the pulse was 120 she could not be saved. This was very discouraging, as her pulse was 125 during the remission, and 160 during the exacerbation. Having carefully re-examined the case, we concluded to take the management into our own hands; di-

rected the stimulants to be diminished one-half, and the interval lengthened, and gradually discontinued altogether; the sponging to be kept up; a long Cayenne pepper plaster, about three inches wide, was applied the whole length of the spinal column, as a substitute for dry-cupping, and was re-applied every night. As soon as the brandy was discontinued we gave the *mistura ferri composita* as a tonic. She improved very rapidly; the frequent sponging removed the dead epidermis and quickened the formation of a new, healthy skin; the abscesses matured, bursted and commenced healing rapidly, and her sciatic pain was much lessened. In about a week she had improved so much that we could dry-cup her, and this was kept up regularly, every alternate evening, during the treatment. After the process of desquamation had been completed, the sponging was directed every night instead of every six hours. At the end of three weeks she was plump and rosy, and required no further medical attendance.

Case 5.—While dry-cupping a very intelligent lady, on the second day after delivery, for the purpose of relieving the usual disagreeable consequences resulting from delivery, she remarked that it made the uterus contract, and examination proved her statement correct. This was a new idea decidedly, and was carefully stored away in our memory for future use. Some time afterwards we had the cups applied to our own spinal column, and while the cup was over the origin of the brachial nerve, some insect stung us on the cheek, and on attempting to raise the hand, found the arm feel very heavy, as if the nerve was partially paralyzed. Good, said we, that will be just the very thing to take off muscular resistance in cases of dislocations of the humerus, and we determined to try it the first opportunity. We did not have to wait many weeks before a suitable case presented itself. A boy about seven years of age was thrown from a horse and fractured the ulna and dislocated the humerus. Dry-cupping was tried over the origin of the brachial nerve, and having rested our right hand on the knee for a fulcrum, with the left hand the humerus was promptly and easily slid into its place, the boy scarcely making a wry face. He was dry-cupped a few times afterwards, and the arm rapidly healed.

In meditating on this case, the extension of the use of dry-cupping to overcome rigidity of the os uteri and the soft parts in cases of tedious labor, quickly presented itself. The remark of the lady concerning the contraction of the uterus was remembered. Now, said we, dry-cupping has most undoubtedly produced contraction of the uterus, and it has likewise, with equal certainty, produced relaxation in the case of the dislocated humerus: why can it not, inasmuch as contraction is the proper normal function of the fundus uteri, and relaxation and expansion the normal function of the os uteri and the adjacent soft parts, produce contraction of the fundus uteri and relaxation of the os uteri at the same time. No good reason presenting itself why it should not produce the effects contemplated, it was marked down for trial. A month or two afterwards a suitable case presented itself, and upon trial it was found to answer the most sanguine expectations. The cup was first applied over the sacrum, and al-

lowed to remain on from five to ten minutes, so as to produce complete relaxation of the os uteri and the soft parts; then another was applied higher up on the spinal column—the first cup still being kept on—and in two minutes pains came on, and the labor was easily and promptly brought to a close. Since that time we have used it with complete success in every case of tedious labor, and sometimes in cases that were not tedious, merely to shorten the sufferings of the patient. We have also used it for the purpose of causing expulsion of the placenta, when the uterus appeared too torpid to act naturally. We published an article in the *Nashville Medical and Surgical Journal*, recommending the new remedy. Some time afterwards, Professor E. D. Fenner of New Orleans, published a report of a case of tedious labor which occurred in his own practice. The lady had been in labor for thirty hours, and he had decided that it was absolutely essential to use instruments to save her life, and just as he had reached that conclusion, the remembrance of my article flashed across his mind; he immediately applied the cups as directed, and she was safely delivered in thirty minutes. Several years afterwards Dr. Hunter, of Virginia, made the same discovery, and published an article in the *Stethoscope*, recommending dry-cupping in cases of tedious labor.

Case 6.—In some eight or ten cases of pregnancy, where it could be conveniently applied, we have used dry-cupping steadily, for the purpose of breaking the chain of nervous sympathy, which so often brings on such serious suffering, and also for the purpose of keeping the whole secretory system in healthy action. Most remarkably beneficial results followed its use, for the patients went their full term without experiencing scarcely any of the usual distressing consequences of pregnancy. We would most cordially recommend it in all cases of pregnancy for that purpose, and that too without any apprehension of causing contraction of the uterus, for that it will not do except the patient has reached her full term, as will be demonstrated by the history of the next case.

Case 7.—We were called to see a negro woman, found her in her seventh month of pregnancy and strongly threatened with miscarriage, as labor pains had already commenced. Her owner, a physician, informed me she had miscarried six times previously, at the same period, and that he had completely exhausted his medical skill in endeavoring to prevent it. Upon examination, found the lower lumbar vertebrae and sacrum so exceedingly tender on pressure, we concluded not to try the cups first, but had a long blister applied, covering all the tender part of the spinal column, and directed a mild opiate. The blister drew finely and afforded very great relief, and as soon as the new cuticle was formed, dry-cupping was tried every alternate night during the remainder of her pregnancy, and with complete success, for she went to her full time, and was safely delivered of a fine, healthy child.

Case 8.—Sarah, a slave hired in our own family, aged about seventeen, subject to frequent and severe attacks of epilepsy from suppression of her catamenia. Her skin, which always appeared to be dry and torpid, became quite furfurous for a day or two previous to an attack—tongue always loaded with fur. Had her regularly dry-cupped and sponged

every alternate night, and in the course of five or six months her catamenia re-appeared in a healthy manner, and she suffered no more from epileptic convulsions during the remainder of the year. After she returned to her owner, she had one attack from extreme exposure during a snow storm, but her mother, whom we had instructed how to dry-cup with a glass tumbler, took her case in hand, and soon relieved her again; and for several years after, while we lived in that neighborhood, she had no return of convulsions, and her catamenia continued regular. We would here state, *en passant*, that we have never, at any time, used any other emmenagogue than dry-cupping and sponging the whole surface, and have uniformly found it to possess entire control over the uterine function, and it always afforded relief, whether the patient was afflicted with amenorrhea, dysmenorrhea, leucorrhea or menorrhagia. Furthermore, we would remark, that from ample experience in cases needless to mention, in cases of barrenness, a course of dry-cupping from four to six months will bring the uterine function into such a healthy condition, that conception cannot be avoided, unless the husband is utterly impotent.

In the treatment of the above case, it was necessary to use injections for several weeks to relieve the bowels, in consequence of the extreme torpor of the system, but the torpor was soon overcome. While on the subject of habitual costiveness from torpid bowels, we would remark that we never use purgatives for the purpose of affording relief, but rely on a wet bandage over the stomach and bowels; and occasionally dry-cupping becomes necessary. The whole alimentary canal, except the rectum, may be in a condition to respond to the stimulus of its contents, but in consequence of torpor of the rectum, no discharge takes place; in such cases, dry-cupping on the sacrum will oftentimes be followed by a discharge in less than an hour.

Case 9.—Roberts, (1849,) in his second year, troubled with cholera infantum, his teeth coming through very slowly. There appeared to be nothing dangerous in his case, and we tried the hydrarg. cumereta, followed by chalk julap; this afforded relief, temporarily, followed by a relapse two or three times. His parents had such unlimited confidence in our skill, that they did not send for any other physician on his third relapse, supposing that if we could not cure him, no one else could. Some weeks elapsed before we saw the child again, when we were summoned as a last chance, and found the little sufferer nearly dead. Pulse 120; tongue dry and furred; skin dry and shrivelled; extreme emaciation and prostration, while the discharges from the bowels threatened death in a day or two. While cogitating on his case, the remembrance of our own fate, and that of four brothers, came to mind:—we were all physicked until we could take no more physic, and when given up to die by the attending physician, as utterly beyond the reach of medicine, we all recovered, though we ourselves were paralyzed in the lower extremities, and our youngest brother was “laid out for dead;” we therefore concluded to let medicines go to Guinea, and try another plan. We had him immediately sponged from head to foot, in tepid water, to be continued twice daily,

and a wet bandage, wrung out of tepid water, was applied over the stomach and bowels, covered with a dry one, to be renewed as often as it became too warm; and lastly, as a substitute for dry-cupping, we had a Cayenne pepper plaster applied the whole length of the spinal column, every night at first, and subsequently every alternate night, for the purpose of regulating the secretory system. The wet bandage soon cooled his fever down and relieved the irritability of the bowels, the sponging removed the dead epidermis and aided very materially in restoring the healthy action of the skin, while the pepper plasters restored healthy secretions and broke the chain of morbid nervous sympathy so completely, that the irritation from the gums could not be reflected on the ganglionic system; and finally, by judicious alternation of the diet, (sweet potato roasted in ashes, a little mutton-suet warmed with a little loaf sugar, fresh butter without any salt, milk boiled with sweet gum bark in it, and soft boiled egg,) the little sufferer was soon relieved and permanently cured. Since that time, we have always, in such cases, endeavored to break the chain of nervous sympathy by pepper plasters, (never use mustard,) and relieve the irritability of the bowels by wet bandages; for young children, we have never used dry-cupping for fear of injury to the spinal column, while in its semi-cartilaginous state, but have used a Cayenne pepper plaster instead.

Case 10.—S. K., aged 75, very infirm, had been vomiting severely; all efforts to stop it had proved unavailing, and the stomach was so irritable it would bear neither water nor medicine of any description. Here was a puzzle. In ordinary cases, the vomiting could have been readily stopped by a cold wet bandage over the stomach, but the age of the patient, together with the extreme prostration induced by the incessant vomiting, rendered it highly probable that if cold applications should be made, reaction would never come on. Being familiar with the plan of reaching the abdominal organs through the spinal column, we had a compress about six inches square, wrung out of water as hot as the hands would bear, and applied to the lower cervical and upper dorsal vertebræ, and carefully covered with a dry one; the diagonal of the compress ranging with the spinal column. The hot, wet compress, frequently renewed, acted "like a charm" and checked the irritability of the stomach so much in the course of three or four hours, that a quilt could be slipped under him, and he was well sponged with hot water from head to foot; this started his skin into prompt, healthy action, and with a pleasant toddy or two he soon recovered.

Case 11.—Dr. Prather mentioned his own case to me. Having sprained his ankle by a fall from his horse, the pain in his back was as severe as in his ankle joint; and, with the hope of relieving the former, he had himself dry-cupped on the spine, and soon fell asleep. Next morning he felt quite comfortable, but was afraid to move his foot, for fear the intense pain of the evening previous would return, and actually held his foot motionless for several hours, but at last found there was very slight inconvenience from moving his foot; he consequently had himself dry-cupped regularly every alternate night, and recovered in one-third of the time usually

required for such cases. During his convalescence *he noticed that his secretory system was performing its functions in a remarkably healthy manner*, and subsequent experience satisfied him that he could control the secretory system completely by dry-cupping the spinal column. The next day after he opened his office in St. Louis, a prominent citizen was thrown from his horse before the office and was carried in, and found to have a sprained ankle. Dr. P. treating him as he had treated himself, and effecting such a quick and comparatively painless cure, a large practice was immediately secured. By adding dry-cupping to his plans of treatment, he was enabled to cure chronic cases on which other physicians had exhausted their skill for fifteen or twenty years, and was overloaded with practice till his death.

Case 12.—Bob, a slave, having cut his leg severely with a broad-axe, we dressed the wound as usual, and as he appeared to be doing very well, we thought no more of the case. Boarding with his owner, we went out early next morning to see him, and was informed by his wife that he had not slept a wink the whole night. There being too many children in the cabin for him to sleep in the day time, we waited until night and then dry-cupped the whole length of the spine. He slept soundly that night, and next morning said his leg "did not hurt much." He was regularly dry-cupped every alternate night, and rapidly recovered, and to all inquiries concerning his leg, he invariably replied it did "not hurt much."

Case 13.—Mrs. L., called to see her on the third day after delivery; found her suffering most intensely; lochiæ suppressed, pulse 130, full and strong; dorsal decubitus, legs flexed, and every kind of bed clothing kept off the abdominal region, which was very hot and excessively tender; pain in the back very severe, skin hot and dry, tongue dry and furred; very considerable thirst; bowels did not need opening. An attendant was directed to stand by her bedside and re-apply, as soon as warm, a light cloth wrung out of moderately cold water, covering the whole abdominal region; her hands and face also to be frequently washed with cold water; this treatment to be kept up for four or five hours, then a quilt was to be slipped beneath her, and the whole surface, except the abdominal, sponged with warm water, and this finished, re-commence with the cold cloths to the abdominal region. To allay her thirst and produce diaphoresis, a pitcher full of cool water was prepared, with about twenty-five grains bi-carb. potass. to the pint, and she was directed to drink ad libitum. This solution was directed with a double view, to allay thirst and produce diaphoresis. The bi-carb. potass., though never classed as a diaphoretic, may be made to become one very readily; for water freely administered is by far the best diaphoretic we have ever yet been able to find, but it is attended with one disadvantage, the stomach will often refuse to tolerate enough, particularly if too cold. Now, in nearly every case of suppression of the action of the skin, there is an acid condition of the system, and by administering a solution of bi-carb. potass., twenty or thirty grains to the pint, the acid condition of the system can be easily removed, and, of course, all the disagreeable

feelings resulting from such condition will be removed also; thirst allayed, and its weakening, harassing consequences removed, and, lastly, the stomach will tolerate water thus prepared in quantities sufficient to produce free, natural diaphoresis. On calling next morning found her tongue moist, abdominal tenderness much decreased—in fact could bear pressure without flinching, unless it was severe enough to reach the deep-seated organs. Being then able to turn on her side, she was dry-cupped the whole length of the spine, and the treatment continued as before, with the addition that the bowels were to be relieved at night by injections. Left her with the understanding that if she became worse notice was to be given immediately. Heard from her on the second day thereafter; fever was gone, lochia had returned, and she was occasionally walking across her room.

Case 14.—Mrs. H.—n, (Logan county, Ky.,) suffering severely with pain in her back and limbs; skin hot and dry; left mamma much swollen, hot, dry, hard and glossy, pain in it very severe; tongue furred, and some dryness in the middle. She had been, accidentally, much exposed to the weather, and the above were the consequences. She was directed to be wrapped in a sheet, doubled and wrung out of water a little colder than the ordinary temperature of the body, and other covering suitably wrapped around her; if she fell asleep, not to be disturbed until she awoke; then a purgative dose of pil. hydrarg. and pulv. rhei was to be administered, and in the morning she was to be dry-cupped. She soon fell asleep and slept upwards of two hours, and having taken the purgative pills, rested tolerably well all night. She was sponged and dry-cupped next morning, the purgative acted finely, and she quickly recovered, without any additional visit.

Case 15.—Mrs. C. had been troubled with a running ulcer on her left arm for several months, during which time a physician had been trying to cure her. Directed her to apply the water dressing, sponge and dry-cup every alternate night, and having instructed her mother how to use a common tumbler, the directions were faithfully carried out, and at the expiration of three weeks, she showed me her arm smoothly healed over.

Case 16.—George, a slave belonging to Edward Campfield, Esq., Augusta, Ga., had suffered much for about four weeks from a distressing cough, during which time his mistress, who possessed a sound judgment, and had great experience in such matters, had exhausted her skill in preparing cough mixtures, but none afforded relief. Upon examination, found his pulse ranging from 120 to 130 every evening; skin dry, harsh and sealy; tongue furred and dry in the middle; coughing severely the whole night, with very short intermissions between the paroxysms. During the day the cough moderated much; the cervical and three upper dorsal vertebrae were excessively tender to the touch, demonstrating the correctness of the conclusion arrived at from auscultation, that the lungs and bronchia were not seriously involved, but that the cough was owing to spinal irritation. He was sponged every night, and dry-cupped every alternate night. In about two weeks, the pulse was reduced to the natural

standard, cough much improved; but owing to his imprudence he at this time relapsed, and his pulse rose again to 120 for five or six days; a continuation, however, of the treatment for four or five weeks longer effected a cure.

Case 17.—Thomas M., (1848), a young man, had been afflicted with chills for six months, and the same physician mentioned in case 1st had been in attendance, but could not check the paroxysms more than from seven to fourteen days. Precisely the same treatment was pursued in this case as had been pursued by the old physician, with dry-cupping and sponging added thereto, and a cure was quickly effected. This case relapsed. We had it distinctly understood, as we always do when we undertake to cure a case of intermittent, that the patient is to abstain *in toto* from the use of milk; at the end of exactly two months, the patient took supper with his mother, and as he felt very stout and hearty, concluded a glassful of her niece, rich, cool milk certainly could not then hurt him, and he accordingly drank a glass of it. Next morning before ten o'clock he had a chill, and now, perfectly satisfied we were correct in forbidding its use, he promised if we would stop the chills once more he certainly would stand the temptation next time. We stopped them again by the same treatment, and for a period of four years, during which time we kept sight of the patient, he never had another chill.

Case 18.—Professor Prather, after having delivered a special lecture on dry-cupping one morning, remarked as we started to the hospital, that if there was a suitable case at the hospital he would demonstrate clearly the powerful influence of dry-cupping. The first case we reached was a man whose leg was swollen from the knee joint downward to about the ordinary size of a three gallon water bucket; it was extremely firm, uniformly solid, smooth and glossy; he had been to nearly every physician in St. Louis, and not one could make out the diagnosis, and Dr. P. himself confessed he could not make out a satisfactory diagnosis. Dr. P. directed that the man should keep his leg more in the horizontal position than he had been lately doing, and that he should be dry-cupped regularly. No other measure was adopted, and we were requested to watch the result of the case. At the end of ten or twelve days the absorbent vessels had been excited to such activity that the swelling was reduced in diameter to less than half the former size, and the diagnosis was then quite clear. The veins had become varicose, and so great had been the effusion and distension that the leg had become so uniformly hard as to render it impossible to tell what was the disease. Unfortunately, however, for our experiment, the man, finding himself so much improved, left the hospital, not being willing to remain the length of time necessary to effect a cure.

Case 19.—In the cholera year of 1849, for several weeks previous to the 9th of June, there had been very little sickness: about that time the first case of cholera occurred near Bowling Green, some fifteen miles distant, and in two or three days thereafter a truly "cholera atmosphere" prevailed, for not a single family escaped sickness; one of my neighbors had four cases of cholera morbus in his family one morning and three the next, and from that time until the middle

of November every case to which we were called (except one surgical) was either vomiting or purging, and oftentimes both. The consequence was we had to ride night and day, and were in the saddle about sixty hours, without sleep, and to the great prostration caused by excessive fatigue, was added the derangement of the alimentary canal, caused by drinking a great variety of water. The skin ceased to act, and the kidneys did not secrete a drop of urine the whole day; about every half hour flashes of white light would dart through the optic nerves, followed immediately by excessive weakness and trembling, at the same time a violent vermicular motion would commence at the stomach and follow the convolutions of the bowels as far as the rectum; but in consequence of partial torpor of that part, and by dint of determined resolution the propensity to go to stool was stopped. These symptoms continued growing worse during the day, until late in the evening, when those flashes of weakness would come on it would be necessary to secure myself in my seat by holding to the horn of the saddle. During the whole day the kidneys were inactive, and all my disagreeable symptoms were attributed to the suppression of their action. When about two miles from home there was a profuse watery discharge from the bowels; but recollecting the case of a man in Russelville who saved himself during the first prevalence of cholera in that place, by firmly inserting a tampon of rolled newspaper into the rectum, we, having determined there should be no more discharges from the bowels, rolled the coat skirt so that the saddle would keep it firmly pressed against the rectum, and thereby restrain any further discharge. We reached home at sunset, and to relieve the distressing thirst and annoying sensations at the stomach, drank a pint of water with about thirty grains bi-carb. potass. dissolved in it, and in the course of an hour near another pint of the same solution; had the dry-cups applied the whole length of the spinal column; the first cup, at the junction of the cervical and dorsal vertebræ, could be felt, but the others could not. This torpor or partial paralysis of the spinal column, explained to me in my subsequent meditations why it was that the serous portion of the blood so readily transuded through the coats of the blood vessels into the alimentary canal, there becoming the well known "rice-water discharge;" and also explained how it was that the tampon of paper could be retained in the rectum and prove serviceable, instead of becoming such a source of irritation as to aid more in expelling than in retaining the contents of the bowels, as would ordinarily be the case. Having remarked to my wife that she would be a widow before the next night if the dry-cupping did not start the secretions, we dropped asleep and slept finely the whole night. On awakening next morning promptly put the hand to the forehead to ascertain the prospects of widowhood for my wife; found the forehead covered with a fine perspiration, and felt very comfortable.

While meditating on the disappointment our patients would experience at our failure to visit them that day we arose, and having walked across the room a few times, to our great surprise found our strength restored. After breakfast we started on our usual round, promising my wife to stop whenever my

weakness should return, but, to our still greater surprise, the weakness did not return, and we actually rode thirty miles that day. The acid condition of the system, which so frequently follows the suppression of the action of the skin and the loss of a part of the serous portion of the blood, had been repaired by the absorption of the alkaline solution; the skin had yielded to the diaphoretic virtues of the water, and the kidneys, having been aroused from their torpor, had eliminated the poisonous morbid matter from the system, which so generally produces stupor or paralysis when they are torpid; and finally, all the secretory system being in full concurrent activity, the consequence was a remarkably speedy restoration to health. We took the hint thus accidentally given, and made it a standing rule to endeavor to restore the action of the skin, arouse to activity the whole secretory system, and freely use the bi-carb. potass., twenty or thirty grains to the pint, for a drink, and though, as before mentioned, every case (except a surgical one) to which we were called until the middle of November was either vomiting or purging, or both, yet we never lost a single case.

As we could not spare the time in many cases to dry-cup, we used a Cayenne pepper plaster three or four inches wide and long enough to reach the whole length of the spinal column as a substitute; in the milder cases we did not dry-cup or use the pepper plaster, being perfectly confident that the secretory system would resume its normal action just so soon as the skin should resume its natural action, and this we readily secured by frequent sponging and hot or cold wet bandages, and occasionally a wet sheet-pack, as circumstances required; these measures, together with the powerful diaphoretic virtues of water, rendered capable of toleration by the stomach by bi-carb. potass., rendered it easy to restore the patients to health. In many cases we used quinine. In those cases where it was necessary to relieve the bowels, we mostly used pil. hydrarg. and pulv. rhei and injections.

Case 20.—While examining, in conjunction with another physician, a lady attacked with cholera, we were requested to leave the room for a few minutes. We were not called in again for about ten minutes, and in that time so profuse had been the "rice-water discharges," that the patient's own mother would have hesitated to certify confidently concerning the identity of the patient, and the cramps which had been severe before were now general and agonizing. The other physician, having Dr. Cartwright's prescription of calomel, Cayenne pepper and charcoal ready in papers, a dose was immediately administered. As we had previously saved a patient in the collapsed stage by wrapping him in a blanket wrung out of water as hot as the hands could bear, we suggested it, and it was quickly tried, and in less than two minutes thereafter the cramping ceased entirely, and did not return. She fell asleep and remained in the wet blanket near three hours. In using this remedy, a dry towel should always be placed over the epigastric region. A pitcher full of moderately cool water was prepared with the bi-carb. potass. in solution, and she was allowed to drink as much and as often as she desired. The wet blanket was directed to be re-applied for an hour at bed-time, and a Cayenne pepper plaster

the whole length of the spinal column. The whole secretory system was aroused to healthy activity, and she recovered without further medical attendance.

It is quite likely the other physician attributed the cure to Dr. Cartwright's prescription, but we are quite confident that nothing else under the sun would have relieved the cramping in two minutes, but the hot wet blanket. The prescription of Dr. C. had been administered twenty or thirty minutes previously, without producing any relief whatever.

Case 21.—James Barrett, Augusta, Ga., Fourth Georgia regiment, letter of company forgotten—but the fact can be substantiated by at least fifty other residents of this place—a soldier discharged for paralysis arising from the severing of the median nerve. His arm was so utterly useless to him, that in order to keep it from dangling continually in his way, he carried it in a sling; it was much shrunken, cold and blueish; fingers bent and stiff; could not touch a single finger with his thumb. We told him we thought he could be cured, and volunteered to do it free of charge; and accordingly dry-cupped him for about three months, making him take his arm out of the sling, so that the circulation could be carried on better, at the commencement of the treatment. At the expiration of that time, he could touch any finger with his thumb, and could grasp his musket with his once paralyzed hand, and lift it with ease from the ground. We did not continue the dry-cupping as long as we desired, owing to some alteration in his arrangements; he, however, continued to improve, and finally re-volunteered in the army, and is said now to be in active service. If there is any other remedial agent which would have effected a cure, we have never been able to read or hear of it.

We now propose to drop the dogmatic affirmation formerly necessary, and by the clear expositions of the excito-secretory system, furnished us by Dr. H. F. Campbell, we can give a clear and logical rationale of the treatment above referred to, and we invite a close, logical scrutiny, so that the reader, if satisfied of its correctness, will be prepared to act accordingly, justly concluding that any "hobby" capable of accomplishing so much is well worth the riding. We shall quote a few pages from "The Secretory and the Excito-Secretory System," by Dr. H. F. Campbell. Page 94, "This cerebro-spinal system has been subdivided into two portions, viz: the nerves of sensation and the nerves presiding over muscular action. A relation has been discovered to exist between these two portions of the nervous system, by virtue of which the sensory nerves have been found to act as exciters to the motory; and hence this system has been termed by Dr. Marshall Hall the excito-motory system of nerves.

"Now, as we hope more fully to set forth in the present discussion, these same sensory nerves are not only exciters to the motory system, but, under certain circumstances, most of them sustain an analogous relation to the secretory nerves, exciting them and modifying their action, diminishing, increasing and altering the secretions, according to the extent and character of the excitation applied. It will be our object, then, to show that the sensory nerves, or at least some of them, sustain to the other two portions of the nervous system

a double relation; first, exciters to the motory system giving rise to the excito-motory system described by Dr. Marshall Hall in 1837; and, secondly, exciters to the secretory system, resulting in the excito-secretory system enunciated first in this country in the year 1850. * * * * * P. 116. We have seen that inflammation, pain, and irritation are produced locally by the process of dentition evinced by restlessness, biting, &c. Secondly, we have seen that this local irritation can be transmitted by excito-motory influence to other and distant parts of the body, manifested by convulsions. We have also endeavored to corroborate this latter opinion by a reference to the order of succession in the nerves in which this irritation occurs, and also by a comparison of these phenomena with other well understood and established analogous phenomena. Heretofore we have had to deal entirely with functions of the cerebro-spinal system of nerves; but to account for this second and more obscure part of our problem, we must look in vain to any direct anatomical connection between the fifth pair and the rest of this system of nerves. We are forced to seek out other connections, indeed somewhat more intricate and indirect, but fortunately no less legitimate and definable. We have now to consider a set of organs which, unlike the voluntary muscles, have no connection, or rather, we would say emphatically they have a connection, though indirectly, with the cerebro-spinal system. We mean the abdominal viscera, which we know are almost altogether supplied from the great sympathetic system of nerves. Now, in the prosecution of our inquiry, it becomes necessary to the elucidation of the question to trace out the same connection between the fifth pair and the sympathetic or secretory, as we did between the fifth pair and the cerebro-spinal or motory nerves, and then, should we succeed, we will briefly inquire into the bearing which this connection and its possible results may have upon our question.

"The connections between the fifth pair, the rest of the cerebro-spinal system of nerves, and the great sympathetic, are so abundant and universal that it is only necessary to enumerate a few of them. First, we have a connection in the ophthalmic or first division by its nasal branch, communicating with the ciliary ganglion; then in the superior maxillary or second division are branches of communication with Meckel's ganglion; again, in the sub-maxillary ganglion, with the inferior maxillary or third division. So much for the fifth itself. Then we know that every one of the spinal nerves throughout the entire cord are connected to each sympathetic ganglion of the system, thus establishing communications the most abundant and intimate between these two systems of nerves. We know also that these ganglia distribute numerous branches to all the splanchnic viscera by plexuses which accompany the arterial trunks into the minute structure of these organs.

"Thus connected and distributed, this nerve presides over the important functions of nutrition and secretion, which office so characterizes it as to give it the name of the SECRETORY system. In the physiology of the nervous system, there is no fact better established by anatomy and pathology, as well as by experiments on the lower animals, than this—

that the sympathetic nerve, whatever else may be its function, always forms a necessary element in the nutrient and secretory apparatus of all the splanchnic viscera; and further, that upon its sanity depends the due administration of these two great functions. It is the nerve for the blood vessels, 'and,' remark Todd & Bowman, 'as secretion is mainly dependant on the normal nutrition of glands, it is reasonable to suppose that function would be to a certain extent controlled by these nerves.'

"(Dr. Carpenter, in speaking of the functions of the *true* sympathetic fibres, says, 'There appears strong grounds for the conclusion that the office of these fibres is to produce a direct influence upon the chemico-vital processes concerned in the organic functions of nutrition, secretion, &c.; an influence which, although not essential to the performance of each separate act, may yet be required to harmonize them all together, and to bring them into connection with mental states.' Principles of Human Physiology, 1853, page 830.) Page 47—Sir Charles Bell's opinion is somewhat similar. 'We are left to the conjecture that the sympathetic or ganglionic system of nerves, according to Bichat, are for those thousand secret operations of a living body which may be called constitutional; circulation, secretion and absorption are operations which simultaneously affect the entire frame.' Page 118—"And as early as 1732, Pourfour du Petit found that the division of the trunk of the sympathetic, opposite the fourth or fifth cervical vertebra in dogs, was followed very rapidly by great disturbance of the circulation of the eye-ball, producing inflammation, flattening of the cornea, and finally destruction of this organ." Page 50—"The experiments of Dupuy upon horses, wherein he extirpated the superior cervical ganglion, were followed by the same results with regard to the local effect in the eye, but also with the more apposite and corroborative consequences, that there was *an eruption over the whole cutaneous surface*, with emaciation and an oedematous state of the limbs." "Dr. John Reid has also experimented on the sympathetic nerve in the neck, and found the eye similarly affected with the above, the conjunctiva becoming red and congested in a few minutes, while in other experiments the eye presented an ecchymosed or blood-shot appearance." Page 118—"We have now glanced sufficiently, we think, at the anatomy and physiology of the sympathetic system of nerves, to make the application of such points as are pertinent in the solution of our pathological problem. In its anatomy, we have seen its connections with all three of the divisions of the fifth nerve by ganglia, the connection of these various ganglia with each other, as well as with the cerebro-spinal axis; and lastly, the distribution of branches from these ganglia, which are conducted by the arteries into every part of every one of the splanchnic viscera. In its physiology, we find it in entire charge of the important functions of nutrition and secretion, and that, wherever these processes are effected, it is by the agency of this nerve alone upon the blood-vessels. And further, that pathology and experiments on lower animals establish its indispensableness to the due performance of these functions, and that, whenever the supply of its innervation has been cut off from a part of

the organism, that part immediately manifests symptoms of impaired nutrition and altered secretion. Now, we are all aware that nearly the whole of the intestinal canal, or rather that portion between the stomach and lower part of the colon, receives no direct innervation from the cerebro-spinal axis, but is entirely dependent upon the sympathetic nerve for its supply of nervous influence of whatever kind it may enjoy, whether motory, sensory, or secretory, and consequently an impairment of the function of this nerve must necessarily correspondently alter its condition, so far as regards all those functions with which this nerve endows it. The alterations in these functions would of course depend in a great degree upon the amount of impairment in the source of irritation; thus, as we have seen, if the supply is entirely cut off, the functions of the arteries seem in a great measure to cease, passive congestions occur and the parts inflame and ulcerate. Now, we can also very naturally conceive of a condition of these nerves somewhat analogous to the above, yet intermediate between the entire interruption caused by section and perfect health—a condition of embarrassed or exalted innervation. Now, this intermediate condition is exactly the state which, from the developments of the foregoing investigation, we feel that we are authorized to affirm is that which occurs in severe dentition, and that upon it is dependent the whole train of intestinal morbid phenomena observable during this process. That this, so far, is legitimately inferable, we do not think any one will deny. Now let us inquire how far these phenomena are dependent upon dentition, and *analogy*, with the *excito-motory* system, will much assist our argument.

"We have seen that local irritations can, through this system, produce convulsions by the reflex function of the nerves, the sensitive branches of the fifth pair becoming excitator to the motory spinal nerves; and so may we justly infer do these same branches, under certain circumstances, become excitator to the *secretory* filaments of the sympathetic, distributed so abundantly to the intestinal canal, by transmission of this irritation through the various ganglia with which it is connected. Thus the irritation at first produces simply an exaltation of the innervation of these secretory surfaces, and consequently secretion is more active than normal, producing simple *diarrhea*. A continuance of the irritation alters the character of the secretion, and we have the various morbid discharges observable during this period. This increase and change in the secretion are effected by the agency of the altered function of the nerve upon the arteries from which these secretions are eliminated. Now, when the innervation of these arteries is still further embarrassed by the long continuance of the *reflected irritation*, the state of things nearly approaches that observed in Dupuy's, Reid's and Pourfour du Petit's experiments of actual destruction of the nerve, and we have ulceration of the intestinal mucous membrane; all these phenomena being the result of various degrees of injury sustained by the sympathetic nerve. * * * * P. 121. In conclusion, let us define the position which, at the end of our investigation, we feel warranted in assuming. It is the following: that in the anatomy and physiology as well as in the dependant analogies of the process of dentition, we find

ample ground for the opinion that the diseases pertaining to this period *may be dependent, and in many cases are entirely so, upon the local irritation attending the process being transmitted either through the cerebro-spinal system of nerves, producing convulsive diseases in the motory apparatus, or through the sympathetic, causing derangements in the secretory organs, particularly the alimentary canal, by the sway which it exercises over the arterial system, from which these secretions are eliminated.* And the practical deductions to be drawn from these conclusions are, that we should not be remiss in taking every measure to arrest or lessen this local irritation, either by free and repeated incisions of the gums, or by the judicious administration of appropriate remedies, among which we have found opiates prove most safe and efficient."

We would beg leave to suggest, with all due deference to Dr. C.'s superior skill, that the "practical conclusions" we would draw from the premises before us, would be to *break the chain of morbid nervous sympathy, and keep it broken by dry cupping or its substitute*, (the same remedy serving at the same time to bring the secretions back to the healthy standard,) and to relieve the irritation, inflammation or ulceration already excited in the alimentary canal by the long continuance of vitiated secretions, by hot or moderately cold, wet bandages to the abdominal region; and, at the same time, pay due attention to the skin, a torpid condition of which is alone amply sufficient to become an excitor to the secretory system, and cause it to pour out profuse or vitiated secretions; then, with judicious management of the diet, we may reasonably expect a cure in a far greater number of cases than we possibly can when such measures are neglected.

The flood of light thrown on the subject of the excito-secretory systems, contained in the above quotations of Dr. Campbell's masterly work, shows us plainly now, how the whole secretory system can be reached readily, certainly and normally, by dry-cupping on the spinal column, and it demonstrates that the dogmatic affirmation of Dr. Prather, that he could control all the secretions with certainty and efficiency by that measure, was in strict harmony with physiological laws, and it leaves all opponents without a shadow of an excuse for neglecting such a powerful remedial agent. Such is its power over the secretory system that we twice produced bilious diarrhoea, by having our own spinal column dry-cupped the whole length, at the first trial; and in two other cases same results were produced—the liver responded so readily that a profuse secretion of bile was poured out, and bilious diarrhoea could not be avoided; after about half a dozen discharges the diarrhoea in each case ceased. Another case fell under our notice where injurious effects followed. A physician, to whom Dr. Prather recommended dry-cupping, forthwith tried it on a patient afflicted with chorea, and the next day the nervous agitation was worse. These cases led us to adopt the plan of gently dry-cupping at first, only using two cups, and gradually increasing the number; and since that time, no injurious effects whatever have been observed. If, however, the patient is suffering from severe pain, or a wound, it may be tried the whole length at first.

We now propose to present certain propositions which we consider to be fairly deducible from all the data above presented, and to their consideration we invite the reader's calm, close and logical scrutiny, for many tens of thousands of persons have died prematurely, since Dr. Prather first made his discovery, in consequence of the heedless, thoughtless derision of "Prather's hobby."

We candidly think Dr. Campbell has made the subject so plain, that no reader can really consider himself excusable *in foro consientiae*, if he shall in future neglect such a powerful means of saving life and relieving suffering; and we therefore invite the most logical scrutiny, presuming no one would be willing to act, unless satisfied of the correctness of his course.

From the above cases and expositions, taken collectively, we may safely affirm—

Proposition 1.—That dry-cupping on the spinal column, by means of the intimate connection of the cerebro-spinal nerves, with the ganglionic system, is a powerful excito-secretory remedial agent.

Proposition 2.—That its proper and useful effects are to bring the performance of the functions of all the various organs to the normal healthy standard.

From Case 9 we may deduce

Proposition 3.—That when the secretions are already in excess, as its uniform effects being the bringing of all the organs to perform their functions in a proper healthy manner, it becomes a sedato-secretory agent by breaking the chain of morbid nervous sympathy, thereby cutting off the irritation which had produced that excess of secretion.

From Cases 1, 4 and 18 we may deduce

Proposition 4.—That dry-cupping is a powerful excitant of the absorbent system.

From nearly all the cases we have

Proposition 5.—That it is the most powerful and useful tonic and alterative agent now known to the profession.

From Cases 11 and 12 we have

Proposition 6.—That by breaking the chain of morbid nervous sympathy, it may become an anodyne.

From Case 6 we have

Proposition 7.—From its effects in breaking the chain of nervous sympathy in cases of pregnancy, preventing most of the usual disagreeable consequences of that condition, we may style it an anticipating or proleptic anodyne.

From Case 7 we have

Proposition 8.—That it is the best remedy now known to break the chain of nervous sympathy in pregnancy and prevent habitual miscarriage.

From Case 5 we have

Proposition 9.—That it is the best remedy now known to shorten tedious labors.

From Case 5 we have, also,

Proposition 10.—That it is the best remedy now known to take off muscular resistance in the reduction of dislocated joints, and also the muscular resistance of the urethra, when

it becomes necessary to insert a bougie or catheter, or to cure chordee.

From Case 5 we have

Proposition 11.—That from its producing such opposite effects as contraction of the fundus uteri and relaxation of the os uteri at the same time, we have an indisputable proof of the correctness of Proposition 2

From the experiments of Dupuy upon horses, wherein the extirpation of the cervical ganglion was followed by a *cutaneous eruption over the whole surface*, we have

Proposition 12.—That disease of the ganglionic system may often be unnoticed, and only manifest itself by severe cutaneous affections.

From Cases 1 and 2 we have

Proposition 13.—That if, in most cases of severe cutaneous affections, instead of making local applications to the part affected, we would proceed upon the assumption that the cutaneous disease was the effect of a cause operating through the ganglionic system, and restore that system to its healthy action by dry-cupping, we should certainly effect a cure, as was effected in those cases.

From the thousands of cases of diarrhoea, dysentery and cholera morbus constantly occurring, we have

Proposition 14.—That a suppression of the action of the skin is amply sufficient to act as an excito secretory cause, developing one or the other of those diseases, and that, if we remove the cause by restoring the normal action of the skin, we can cure such cases far more readily than by relying upon opiates, astringents, mercurials or purgatives, and neglecting the skin, as too many now do.

From Case 9 we have

Proposition 15.—That a vast proportion of the cases of soldiers discharged by reason of chronic diarrhoea and dysentery, may be readily cured by regulating the secretions by dry-cupping, keeping up the healthy action of the skin by frequent sponging, and relieving the irritability, inflammation or ulceration of the alimentary canal, induced by the deranged condition of the ganglionic system, by a wet bandage, hot or cold, as circumstances may require.

From hospital statistics and the results of the ordinary practice we have

Proposition 16.—That a large proportion of such cases of chronic diarrhoea and dysentery *cannot be cured* by the ordinary plans of treatment.

From Dr. Campbell's proposition, (page 119,) that "local irritation can, through this system, produce convulsions by the reflex functions of the nerves, the *sensitive branches* becoming *excitor* to the motory spinal nerves;" and so, we may justly infer, that these branches, under certain circumstances, become excitor to the *secretory* filaments of the sympathetic—we have

Proposition 17.—We may justly infer, in traumatic cases, that the irritation of the wound becomes excitor to the secretory filaments of the sympathetic; hence we have either wastings, continued fever and profuse discharge of pus from

the wound, or vitiated secretions and morbid discharges from the lungs or bowels.

As we have demonstrated, by successful practice, that the chain of morbid nervous sympathy, in cases of dentition, can be broken, and the ordinary evil consequences of such irritation be prevented, and also in Cases 11 and 12, we therefore deduce

Proposition 18.—That, in traumatic cases, the chain of morbid nervous sympathy can be broken and kept broken by dry-cupping, thereby preventing the usual evil consequences of such irritation.

In cases of dentition, when the irritation has continued long enough to produce actual and serious disease of the alimentary canal, breaking the chain of nervous sympathy extending from the gum to the alimentary canal, will not alone be sufficient to effect a cure, it being necessary also to relieve the irritability of the alimentary canal by wet bandages; we therefore deduce

Proposition 19.—That likewise, in traumatic cases, breaking the chain of nervous sympathy by dry-cupping will not alone be sufficient, but it will be necessary to relieve the irritation in the wound itself, or in the part to which it may have been reflected, by the water-dressing, and prevent the skin from becoming an excito-secretory agent through the suppression of its action, by frequent sponging of the entire surface.

Purely Theoretical.

From the prompt relief afforded in the two cases of cramping in the collapsed stage of cholera, by wrapping the patients in blankets wrung out of hot water, thereby stopping the cramping in two minutes, we may logically deduce

Proposition 20.—That the diseased condition of the skin had become an excitor to the motory spinal nerves, bringing on cramps.

From the well known fact that wounded soldiers who are left on the field of battle during cold nights, are far more likely to be affected with tetanus, and that idiopathic tetanus occurs, we may deduce

Proposition 21.—That in cases of traumatic and idiopathic tetanus, the skin has become, as in the cramping stage of cholera, an excitor to the spinal motory nerves.

From the fact that the patients in the collapsed cramping stage of cholera were immediately relieved by enveloping them in hot, wet blankets, we have

Proposition 22.—That in cases of traumatic or idiopathic tetanus, we may relieve the deranged condition of the spinal motory system, by likewise wrapping the patient in a hot, wet blanket, and by keeping the chain of morbid nervous sympathy broken, and all the organs in healthy action by dry-cupping, a cure can be effected.

Let us quote again from Dr. Campbell, page 50-1:

"The experiments of Dupuy upon horses, wherein he extirpated the superior cervical ganglion, were followed by the same results with regard to the local effect in the eye, but also with the more apposite and corroborative consequences, that there was an eruption over the whole cutaneous surface,

with emaciation and an œdematous state of the limbs. Dr. John Reid has also experimented on the sympathetic nerve in the neck, and found the eye similarly affected with the above, the *conjunctiva becoming red* and congested in a few minutes, while in other experiments the eye presented an *ecchymosed or bloodshot appearance*. * * * * *

Now, a reference to some of the pathological phenomena of typhoid fever will discover a close analogy, if not identity, to the above results. In the first place, the conjunctival congestion—its character, the attendant suffusion, together with the entire freedom from pain, even on exposure to the strongest light; while, at the same time, none of the symptoms of true inflammation are present; all indicate the seat of the nervous derangement upon which it depends, to be the ganglionic system, and not the cerebro-spinal, the analogous arrangements of which are invariably of a sthenic character, and attended with acute pain in the region in which they occur. Again, an attentive consideration of the character of these congestions will show that it does not vary in any respect, except in degree, whether occurring in the mucous membrane of the eye, that of the stomach, pharynx, small intestine, large intestine or bladder in the typhoid type, or on the cutaneous surface in the typhus. In all the above localities, and under all circumstances, we find the capillary congestions wearing the same aspect, assuming invariably a *passive* character, often approaching the condition of true stasis, but never attended with the florid redness, the pain or the swelling of active inflammation. Lastly, in the cutaneous petechial eruptions or maculæ of the typhoid type of continued fever, we can also detect the same character of *passive congestion* from deficiency of nervous energy carried to a still greater degree. In this type the nervous power of the cutaneous capillaries is so far diminished, that it amounts to a state of actual paralysis, allowing such distension of the capillaries that their rupture and a sub-cutaneous effusion is the result."

From Case 4, wherein it is shown that the suppression of the action of the skin developed itself by involving the ganglionic system, producing inflammation and a profuse discharge of pus from the inflamed part, we have

Proposition 23.—That suppression of the action of the skin may seriously involve the ganglionic system and all parts dependent thereon for nervous influence.

And conversely, from Cases 1 and 2, we have

Proposition 24.—That serious disease of the ganglionic system may keep up disease of the skin, or in other cases keep up torpor of the skin.

And from both these propositions we deduce

Proposition 25.—That the great obstinacy of typhus and typhoid fevers is owing to severe disease both of the skin and the ganglionic system, they mutually re-acting on each other, and each preventing the other from resuming its natural, healthy action.

And lastly, from all the data before us, we have

Proposition 26.—That, in typhus and typhoid fevers, a frequent wet sheet pack, wrung out of water about ordinary temperature of the body, would be a powerful adjuvant to

reduce the pulse and fever heat, and restore the action of the skin; that a wet bandage, covered with a dry one, laid over the whole body during the interval between the wet sheet pack, would answer admirably to relieve the irritability or inflammation of the alimentary canal, produced by the conjoint derangement of the skin and the ganglionic system, while diaphoresis is produced by the free use of water and the bi-carb. potass.; and lastly, that dry cupping, in consequence of being a powerful excito-secretory remedial agent, would cause all the various organs to perform their functions in a healthy manner, thereby soon removing the main causes of these diseases, and proportionally shortening their duration.

In conclusion, we would most earnestly urge the above propositions upon all interested, for a more powerful and useful remedial agent than that discovered by Dr. Prather, and the rationale of whose *modus operandi* has been so ably elucidated by Dr. Campbell, has never yet been conferred on man; and the welfare of thousands of our soldiers, who have so nobly sacrificed themselves in our glorious cause, demands that the profession should cease to deride it as a "hobby," and should take it up and test its effects impartially. If any surgeon desires to criticize this article, all we ask is, that he shall select a number of patients wasting away from a profuse discharge of pus, and having applied the water dressing to the wound, and to any other part to which the irritation may have been reflected, then sponge and dry-cup every alternate night for one month, and then criticize as he may deem most advisable.

One peculiarity concerning it and we have done. It produces its best effects when the patient can sleep or retain the recumbent position for some hours after the operation.

To the calm, candid and conscientious investigator we cheerfully submit the foregoing.

ART. II.—*Loss of the Pericranium and its Reformation without Necrosis or Exfoliation of the Cranial Bones.*
By LE GRAND CAPERS, Surgeon P. A. C. S.

In support of the views recently advanced by Surgeon E. S. Gaillard, in his article on "The Relations of the Periosteum to Osteogenesis," the following case is submitted.

It is proper to state, as a prefatory remark, that Surgeon E. S. Gaillard, in the article to which allusion is made, claims that "no fallacy is more frequently accepted as truth, than that the periosteum is necessary to osteogenesis: that it is essential for the vitality and reparation of bone." He questions the truth of the dogma so frequently taught in the library and in the lecture-room, that "denuded bone will die," and endeavors to prove, by reasoning and illustration, that denuded bone, on the contrary, will be recovered and its vitality remain, as a rule, uninjured.

This important subject, the economy of life and limb, can not be too frequently brought to the attention of the profession, or the truth advocated be too fully illustrated. It is in this connection that the following case is submitted.

The case was one in which the entire scalp (integuments and pericranium) was forcibly removed, from frontal protuberance, around over the ears and across the superior semi-circular ridge of occiput, by that barbarous process termed "scalping."

The bone, thus denuded, was seen and felt by the officers in charge, Assistant-Surgeons A. K. Smith, Vollum and Swift, U. S. A., and by numerous officers of the garrison, as well as by myself. Over this extensive surface, granulations soon formed, sprang up, as it were, and in less than four weeks the entire bones were covered and protected by a thick, fleshy, granulating surface, covering every vestige of bony matter; *this without exfoliation or necrosis*. It would seem still more remarkable from the fact that the patient, a Mexican boy of eighteen years, having been left for dead by the Indians who committed the deed, was alone, sixty miles from the nearest post fort, "Phantom Hill," and was several days in making the journey; the parts, during the interval, being exposed to the sun, night-air and dust of the road. From these causes several days intervened ere he received the slightest attention. Immediately before losing his scalp, the patient received a rifle-ball wound at the lower and posterior part of the neck, which for some time rendered him insensible. The ball fractured the spine of one of the cervical vertebræ, traversed the neck and arm, emerging near the elbow, in its course fracturing the outer half of the clavicle and also the humerus. A point of interest, and one which possibly may prove instructive, is the statement of the patient, that to arrest hemorrhage, having nothing else at hand, he applied to his wounds tar and grease from the tar bucket of his wagon. Could this mixture have exerted any influence upon the denuded bone in causing granulations, or was it an inflammatory action of the bone itself causing effusion of lymph with subsequent organization? Could this mixture have acted primarily as a styptic? In conclusion, I may mention that the patient died about four months after the injury, from the effects of the wound of his spine. The granulations of the head were completely covered with cuticle by the sixth week, after which he experienced not the slightest inconvenience from the injury to the scalp; the pericranium having been completely restored, and the vitality of the denuded cranial bones not having been in any respect impaired.

It would be advantageous to the profession, for others to contribute their testimony also in regard to this interesting subject.

ART. III—*Report of a Case of Acute Laryngitis, in which Laryngo-Tracheotomy was performed.* By IGNATIUS D. THOMPSON, Assistant-Surgeon P. A. C. S.

About midnight, on the 14th of March, 1863, was called to Private Davis, in General Hospital No. 2, Lynchburg, Va. Discovered the case to be one of acute laryngitis, with œdema of the glottis; patient leaning anxiously forward, laboring for breath; countenance distorted, throat and neck much swollen; could speak only in whispers and with much difficulty; pulse weak and irregular, and skin bathed in clammy sweat.

Private Davis had been admitted into hospital ten days previously, with chronic rheumatism, and, until this night, had been entirely free from any disease of respiratory organs. On going to bed, about eight o'clock that evening, had complained of sore throat, but was not considered ill. A little before midnight he aroused the nurse and said he was dying of suffocation.

Emollient poultices and derivations, together with antimony, in nauseating doses, gave temporary relief; but in a few hours the worst symptoms returned, and soon the power of respiration was lost entirely. The patient, completely asphyxiated, struggled violently for a short time, and then, to all appearances, was dead. A thumb lancet was the only surgical instrument at hand; with it, laryngo-tracheotomy was immediately performed. The incision was made in the median line, through the crico-thyroid membrane, cricoid cartilage and first ring of the trachea.

There was much less hemorrhage than, from the vascularity of the part and asphyxiated condition of patient, might have been anticipated.

Artificial respiration was now practised for nearly two minutes, when a little blood and some frothy mucus were expelled through the opening, and the lungs resumed their functions.

The patient soon recovered consciousness, and presently expressed himself, in writing, as greatly surprised at finding that he was "alive again."

The handle of a thumb-lancet, turned transversely in the opening, afforded sufficient air, and, after daylight, one of Obre's admirably constructed trachea tubes was obtained and carefully fitted into the opening. Nourishment and stimulants were now administered through a gum catheter which was passed into the œsophagus.

My subsequent knowledge of the case is due to the courtesy of the medical officer in charge of the ward, (in whose temporary absence I had been called upon.)

On the second day after the operation the swelling of the throat had subsided and the patient so far recovered as to be able to leave his bed and could take fluids in the natural way.

During the second night after the operation, either from accidental displacement of the tube or the clogging of it with mucus, the patient suddenly expired.

A *post mortem* examination proved the correctness of the diagnosis.

It is believed that this should be regarded as a successful operation, as the death of the patient resulted from an accident which might always be averted.

ART. IV—*The Position of the Hand in Fracture of the Fore-arm.* By PAUL F. EVE, M. D., Augusta, Ga.

I propose to call attention to the *mal-position* of the hand allowed by many surgeons of our army in treating fractures of the fore-arm. I am sure I have seen in Atlanta and Augusta hundreds of cases, within the past three years, in which the usefulness of the limb has been greatly impaired simply

from the improper position of the fore-arm when broken. During this period patients have been examined, and wounded soldiers met in the streets, carrying the hand of the fractured member in a state of pronation, from which cause alone, when the bones will have re-united, the opposite motion, supination, will ever afterwards be rendered impossible. Men may be seen every day on the trains, by the wayside, in towns and villages, at home, even in hospitals, with the hands of broken fore-arms turned downwards and supported on boards, gutters and various kinds of splints, suspended from the neck by all sorts of slings; and most of them, no doubt, having these useful members permanently injured—losing forever the *all-important rotatory motion* of the radius upon the ulna, and consequently the ability to turn the hand over upon itself, or on its back. Now, if these are facts, and this loss of motion could have been prevented, and this too by the usual treatment recommended and pursued by the profession, then surely a grievous error, to say the least of it, has been permitted to obtain among our wounded.

As soon as I observed this practice, which has already, I apprehend, maimed for life thousands of our soldiers, I promptly and officially notified the Surgeon-General of the evil through the post-surgeon of Atlanta.

The proper position of the hand in fracture of the fore-arm is that which places the injured member between the states of supination and pronation. The limb should then be flexed at right angles, across the chest of the patient, with the thumb pointing directly upwards towards the chin. The main indication in the treatment is to preserve the interosseous space between the two bones of the fore-arm, upon the existence of which most important movements of the hand depend. It is true that in complete supination the radius is more widely separated from the ulna, but this being a forced position, prevents relaxation of muscles, and would be too painful to be borne; and it is certainly as true that its opposite or antagonistic position, pronation, by rolling these bones together, destroys all the space between them. Hence, with great unanimity, authors and practitioners treat fractures of the forearm on the principle described, keeping the limb thus confined some forty to sixty days. Fortunately, too, this treatment is applicable alike to one or both bones, or to whichever one may be broken. The usual apparatus, consisting of two rollers two and a half inches wide by six yards long; two light, straight splints; wide as the fore-arm to be treated, and in length extending from the elbow to the tips of the fingers; and two compresses, the size of the splints—are easy of access, answer a good purpose, and is an excellent substitute for many peculiar splints, &c., invented but not now attainable. With two additional compresses, three inches square and a half inch thick, when the radius is broken near the wrist, one placed over the lower end of the two bones, anterior surface, (hand supinated or nearly so,) and the other on the dorsum of the hand, I have managed for thirty-six years the various fractures of the fore arm, and I think with good results. The all-important indication in these cases is to have the anterior splint so long that the hand, during treatment, cannot

become prone, that we may obviate the very condition now complained of, to be met with and deplored every day in our army.

ART. V.—*A Case of Snake-Bite successfully treated with Calomel and Iodide of Potassium.* By J. J. KNOTT, Assistant-Surgeon Fifty-Third Georgia Regiment.

Thomas Williamson, private company "I," Fifty-Third Georgia regiment, was admitted into Infirmary on the night of the fourth of July, having been bitten by a serpent known as the CROUCHER or moccasin. I found, on examination, the left hand and arm for some distance above the elbow much swollen, attended with severe pain of this member. I ordered a poultice of carb. ammonia and flax seed, to be applied over the wound.

July 5—Examined the arm and found that the swelling had increased considerably and pain augmented, the patient complaining of nausea, severe pain in head, with a sense of dizziness. Having no preparation of arsenic at hand, I determined to try a new mode of treatment, viz: the *anti syphilitic*, regarding the indication to be filled as the same. I therefore ordered No. 1, hydrarg. chloridi mitis, eighteen grains; pulv. opii, three grains; fiat pulv. No. 6, one to be given every four hours—No. 2, Iodide potassium, two ounces; aqua fontana, two drachms; teaspoonful every four hours.

July 6—Symptoms somewhat more unfavorable; treatment continued.

July 7—Symptoms more favorable; swelling subsiding. From this time the patient continued to improve, and at the present time the swelling has entirely subsided, as well as other symptoms.

I have thus briefly reported this case, which you are at liberty to publish, should you deem it worthy of a place in your columns. I can not help but regard these remedies as being fully as efficacious as "Bibron's Antidote." The articles are more accessible than those contained in Bibron's, their exhibition more harmless, and their *modus operandi* the same.

CHRONICLE OF MEDICAL SCIENCE.

Notes upon Diphtheria. By W. F. WADE, Senior Physician to the Queen's Hospital, Birmingham.

Four years ago I published a fragmentary memoir upon diphtheria, intending to finish it at an early date. But much remains yet to be done before a complete account of this disease shall be possible. The fact that a great majority of cases occurs in private practice, where facilities for minute observation during life are scanty, and post mortem examinations are constantly refused, is one principal cause of our deficient knowledge. Another is that public attention has not yet been sufficiently attracted to certain points, the determination of which is essential to any satisfactory history of the disease. In the hope of procuring for these points that investigation which is due to them, and which most assuredly they will eventually obtain, I venture to submit the

following propositions to the profession. The style adopted is certainly open to the imputation of curtness; but it seems to me that by divesting the subject as far as possible of extraneous matter and verbiage, those who desire to do so will the more readily arrive at my meaning. I have abstained from particularizing the data upon which these conclusions are based, some of them are received medical dogmas. With regard to the others, the continued prevalence and fatality of diphtheria will enable every one to judge for himself whether or no it presents the features and phenomena here indicated, and whether the practical conclusions here drawn are wholly, partially, or not at all justifiable. I have only to add that in the hope of concentrating attention upon certain points in the natural history of the disorder, many others of great interest have been entirely omitted.

1. At the commencement of the present epidemic, being dissatisfied with previous post-mortem examinations, which had been limited to an investigation of those parts whose tissues are continuous with those of the throat, and having noted phenomena which were not thereby explained, I determined, when opportunity should offer, to examine the state of other organs whose tissues were not so continuous.

2. The first post-mortem furnished me with kidneys (of which I retain a drawing) as much altered in appearance as any that we find after death from scarlatinal dropsy.

3. Obvious pathological analogies led me then to suspect that such a condition would be attended with albuminuria during life. The examination, next day, of the urine of a patient under the care of Mr. Robins showed that it contained albumen. The frequent occurrence of albuminuria in diphtheria has since been universally recognized.

4. Curiously enough, subsequent reflections have rarely furnished me with kidneys so conspicuously altered as these first ones. The changes are more commonly microscopical; consisting of crowding and opacity of the epithelium, which is most readily detached and rapidly disintegrated.

5. Casts of various kinds are to be found in some specimens of the albuminous urine of diphtheria.

6. This albuminuria and these anatomical alterations of the kidney are important as showing: (a,) That the disease does not spread solely by continuity of tissue, as had previously been believed; (b,) That in some cases the disorder has a tendency to migrate, and in such there is more reason to apprehend croup and other complications than in cases where this migratory tendency is not apparent.

7. Albuminuria as a symptom of disease is important from the fact of its being frequently, though not necessarily connected with and dependent upon conditions which impair the excretory action of the kidneys.

8. In many cases there are indications of diphtherial albuminuria being so associated.

9. These indications are: diminution of the urine in quantity; suppression of the lithates; nervous symptoms—as indifference to surrounding objects, somnolence, coma—coincidentally with the commencement of the albuminuria, and not referable to any other known cause but the kidney complication.

10. The commencement of the albuminuria may be attended by an increase of the pyrexia, unexplained by any increase of the local disorder or other efficient cause.

11. These symptoms are relieved by increased urinary excretion.

12. Albuminuria is not necessarily attended by any obvious symptoms of an unfavorable character.

13. An imperfect elimination of urinary elements may be unattended by albuminuria. In one case, sudden diminution of the urinary secretion without albuminuria was attended by swelling and pain of the carpal joints (rheumatic.) The symptoms described in No. 9 are developed coincidentally with this imperfect elimination.

14. I have not observed the early presence of albumen in the urine, which from the concurrent testimony of trustworthy observers, no doubt frequently occurs. Two explanations of this fact offer themselves. In the first place, most of my cases have been seen in consultation, which is demanded in the majority of cases only when fatal symptoms have already supervened. Secondly, my treatment has long been directed to the prevention of kidney complication.

15. Apart from its early occurrence, there seems to be a special tendency to albuminuria about the seventh or eighth day, at which time the disorder has a natural tendency to terminate. Under such circumstances it is to be looked upon as a critical phenomenon. It may occur at any period.

16. Kidney affection commonly precedes other complications, such as croup and purpura.

17. More exact observations upon the amount of urinary excreta before, during, and after intercurrent albuminuria are much wanted. Also in cases where albuminuria does not occur.

18. If there be retention of urinary elements in the system, it is probable that it tends to induce other complications. (See Dr. Parke's Lectures on Pyrexia.)

19. I have found specimens (of which I retain drawings) of anatomical alterations of the spleen, which has in some instances been found solidified, and of a pinkish-buff color.

20. The microscope showed that in such spleens there was an unorganized, hyaline, semi-solid material filling the interspaces of the trabeculae.

21. I have also found alterations of the spleen such as Dr. Habushon has described as occurring in cases of purpura.

22. In no case has manifest alteration of the spleen been found after death when purpura had not been observed during life.

23. Some cases of purpura have been seen in which I could not undertake to say that the spleen was abnormal.

24. There is no constant proportion between the severity of the purpuric symptoms and the amount of the splenic change.

25. The vast majority of fatal cases have presented croupy symptoms in the last stage, but many would probably have been fatal without the croup.

26. In no case that I have dissected has the laryngeal exudation been continuous with the faucial.

27. In no case of croup that I have dissected has the exudation failed to extend beyond the bifurcation of the trachea. In most instances it has extended into the minute ramifications of the bronchi.

28. The tracheal and bronchial exudation has varied in consistency from a very firm membrane to a pasty granular layer.

29. In two cases, besides (other?) purpuric symptoms, I found after death nodules of pulmonary apoplexy.

30. In one case I thought that there was some hyaline

exudation in the supra-renal capsules. In that case, and in another, these organs were intensely vascular.

31. We are justified by the preceding observations, as well as by other well-known symptoms of the disease, in looking upon diphtheria as a zymotic disease; not as Bretonneau conceived it to be, a local disease spreading by continuity of tissue, and only affecting the system in a secondary manner.

32. I have never stated, and I am not prepared to state my opinion upon the relation, if any, between diphtheria and scarlatina.

33. To those who find less difficulty in coming to a positive conclusion upon the point, I beg to recommend the following considerations: (a.) Scarlatina and diphtheria may be associated; (b.) Scarlatina is not necessarily accompanied by efflorescence, or by noticeable fever; (c.) Diphtheria may probably affect the system without producing any throat exudation; (d.) Scarlatina may recur; (e.) Certain forms of scarlatina may be accompanied by albuminuria; (f.) Scarlatinal albuminuria does not necessarily produce dropsy; dropsy, in fact, is the exception in albuminuria accompanying scarlatina; (g.) Any occasional form of a specific fever may become the type of an epidemic; (h.) Granting that scarlatina and diphtheria are both zymotic disorders, we do not know what is the nature of their specific poisons.

34. Local treatment exerts no known influence upon the general course of specific fevers.

35. The true rule of practice in such diseases is to obviate the tendency to death.

36. The tendency to death in diphtheria is sometimes by asthenia, directly induced by the blood-poison; sometimes by complications, of which the earliest is generally a kidney affection, interfering with urinary elimination. We must therefore eliminate the poison, and if possible prevent the complications.

37. In pyrexial disorders, one of the most constant and mysterious phenomena is the quantity of water disposed of by the system. (See Parkes on Pyrexia)

38. In diphtheria the quantity of ingesta will be commonly small if the patient be allowed to consult his own convenience.

39. Water is essentially necessary to the performance of the urinary functions.

40. Concentration of the urine is equivalent to kidney irritation.

41. Diphtheritic albuminuria is often preceded by urine of high specific gravity. The supervention of albuminuria may fail to reduce this.

42. It is often preceded by deposit of lithates, showing a comparative paucity of the urinary water.

43. All plans of treatment which have been adopted on the large scale for the treatment of diphtheria have embraced the ingestion in large quantities of fluid nutriment as an important if not essential element.

44. By the copious administration of pure water or diluents in diphtheria, the urine may be enormously increased in quantity, often without corresponding diminution of its specific gravity.

45. This seems to indicate that the detritus of interstitial metamorphosis had been previously insufficiently eliminated.

46. I recommend the ingestion of bland fluids in as great

quantity as the patient can bear—half a pint every hour or two, if possible, in the case of adults.

47. To avoid chills, I recommend that the patient should be clothed from head to foot in a flannel gown, and kept in bed. I believe that the adoption of this plan would have saved almost innumerable lives.

48. Assuming the presence of a substitute poison in the system, we know no drug which will act as a direct eliminant but iodide of potassium. It positively eliminates lead, and we may presume that it positively eliminates syphilis.

49. I employ iodide of potassium in two, three, or four grain doses every two or three hours. I have been in the habit of conjoining with it chlorate of potassa in five to ten grain doses.

50. I have known no case of a fatal termination where this plan had been carried out. I have known no instance of serious symptoms or secondary paralysis supervening when this plan had been rigorously carried out. The difficulty, especially with children, is in insuring a copious supply of fluid.

51. This plan exercises a speedy and salutary influence upon the general symptoms of the disease. The exudation often diminishes with extraordinary rapidity. Essential fevers run a definite course, and can be rarely, if ever cut short. Till the disease is gone we cannot be free from the danger of complication. Hence the immense importance of continuing the treatment after immediate relief has been obtained.

52. Aqueous injection may be employed to supplement ingestion by the mouth; but this is a plan of very inferior efficacy. If deficiency of urine be present, bitartrate of potash, sinapisms to the loins, warm bath and solution of acetate of ammonia help to restore it.

53. This general plan of treatment does not preclude other remedies in special cases, or to meet special indications.

54. Where it has been carried out I have not found a necessity for stimulants, nor have I found that these, when administered, have produced that immediate and sensible (even if incomplete) amelioration that we expect to see in cases where they have a beneficial influence.

55. The same may be said of tonics and iron. I have never met with such marked anatomical attractions as in cases which had been freely treated with a mixture containing muriated tincture of iron and hydrochloric acid. It does not necessarily follow from this that such remedies may never be required, but they should not be used indiscriminately and recklessly.

56. It is contrary to the ordinary rules of our art to interfere with the local development of blood-poisons, except for special reasons.

57. The faucial exudation of diphtheria is to be considered as the local manifestation of a general disease.

58. Interference with it will not prevent its reproduction, nor will it prevent laryngeal complication, nor will it prevent the supervention of grave constitutional disorder. It is, besides, exceedingly irksome to young patients.

59. We are justified in interfering with the throat exudation when there is excessive fetor, or when it is so copious as to interfere with respiration or deglutition—not otherwise.

60. If the croup always extend below the bifurcation of the trachea, tracheotomy is but a forlorn hope; as such it may be right to resort to it in some cases.

61. I am not satisfied with that explanation of the secondary

paralytic affections which attributes them to reflex irritation. Possibly minute dissections might discover some organic change in (a,) the nervous centres, (b,) the nervous periphery, or (c,) the muscular tissues.

62. Albuminuria may or may not be present in cases of diphtherical paralysis.

63. Cases of paralysis progress so slowly when treated simply by quinine and other tonics as to lead to supposition that these drugs exert no direct influence upon this sequelæ, which probably in some cases wears itself out.

64. I believe that I have obtained more speedy results with eliminants—as iodide of potassium, iodide of iron, and bichloride of mercury with bark.

65. Blisters to the top of the sternum, if applied early, seem to exercise a most beneficial influence upon the paralysis of the palate.

66. Paralysis may follow, as kidney complication may attend, slight as well as severe cases of diphtheria. In one case I have heard that the paralysis has lasted two years, and may be considered permanent.

Is Alcohol Food? By THOMAS INMAN, M. D.

In his address upon this subject before the British Medical Association, the author first devoted a few words to definition, stating that by "alcohol," he intended to comprise those liquors in common use which owed their effects to alcohol; and by "food," anything which supplied material by which the body was nourished. He then adverted to the fact that a saccharine matter was found in the blood of all mammals when it entered the lungs, and to the strong probability that a fermentative process took place in those organs, with the extrication of carbonic acid, the actual sources of which in the blood had not yet been absolutely ascertained. The close atomic composition of starch, and sugar and alcohol, *plus* carbonic acid, was pointed out; also, the fact that the starches, &c., and alcohol were often tolerated by delicate stomachs when other ingredients were not tolerated.

The author then shortly summarized the effects of ordinary food, whether animal or vegetable, when taken with water as a beverage, and in proper quantity, and compared these with the results following a temperate draught of ale or porter; showing that there was no real distinction between the one and the other, except that the liquid sooner entered the circulation and sooner left it. It was no argument against the use of beef that a man who had dined on it one day wanted a dinner the day after; nor against beer, that a person who had taken one glass was ready for another in a few hours. The prejudicial effects of excessive eating were adverted to, and after mentioning a few instances where guzzling had proved fatal, others were alluded to in which a prolonged lethargy or an apoplectic condition had been induced. The use of beef tea, sometimes, produced convulsions in infants, but this result did not vitiate the dietetic value of meat. The physical condition of excessive eaters was then spoken of, and it was shown that some were thin, others stout; and that as regarded the moral condition of those who, from choice, religious belief or necessity, abstained from the use of alcoholic beverages, they were to the full as bad as those who indulged in drink. Cannibals were teetotallers, and neither Nana nor Tippoo was a drunkard. On inquiring into the habits of total abstainers and those who drank ale, wine, &c., the author had ascertained that the former habitually ate much more than the latter; and one of these deductions was necessary—either that the former ate too much, the latter too

little, or the drink of the one was equivalent to a portion of the food of the other. To ascertain which of these alternatives was nearest the truth, Dr. Inman had experimented in his own person, and made numerous observations through the assistance of friends. The conclusion he came to was that which had previously been insisted on by Mr. Lewes and others—namely, that alcohol replaced a certain amount of food; and "as things which are equal to the same are equal to one another," he inferred that if a glass of ale was equal to a slice of mutton in its satisfying effect, and that mutton was food, it must follow that ale is food. To say that persons could not live on ale, was of no value as an argument; for no one could live on biscuit alone, though bread was called the staff of life. To ascertain how far it was possible for any one to live on alcohol alone, he had been for many years seeking information respecting drunkards, and he mentioned two—one on the authority of the individual herself, (a surgeon's widow,) and the other on the authority of the medical attendant, where patients had subsisted for a prolonged period on brandy and water alone. He mentioned others on the authority of other medical friends, and two which he had himself been conversant with. He combatted the idea of the probability of imposture, inasmuch in all these cases solid food was loathed excessively, and was generally rejected by the stomach. He then mentioned some cases of children that he had attended, in whom the appetite had failed entirely, where food which was administered by force, had been vomited; yet in these, alcohol in one form or other, gave the support which other food did not, and gradually restored the appetite to its normal state. He noticed, too, that infants at the breast, when ill, would digest brandy and water when they would reject all else. The advantageous influence of this fluid was apparent even if it were administered in enemata.

A definite course of induction, irrespective of chemical theory, having ended in the conclusion that alcoholic drinks were strictly alimentary, he shortly referred to the statements which were relied upon to demonstrate the contrary. If alcohol, he said, passed out of the system unchanged, so did water; yet water was absolutely necessary to life. But there was no proof that all the alcohol imbibed in a long symposium ever left the body. He inferred that if it did pass out of the lungs in vapour as largely as was assumed, a party of spirit-drinkers would make the atmosphere of a closed room explosive; and he recalled the statement of Pereira, that some northern race had found that two or three people, in succession, might keep up intoxication with "*lolum temulentum*" by drinking the urine of the first eater; yet none had discovered that the urinal of a drunkard contained anything equal to gin. But certain foods—as oatmeal, bran, potatoes, oats, &c., were not wholly retained in the system, yet they were alimentary.

Dr. Inman then combatted the idea that alcohol was mere stimulant, by contrasting it with turpentine, cantharides, ginger, cayenne, iodide of potassium, and other drugs, which were stimulants to every part of the body to which they were applied. He argued that alcohol could not simply be a conservator of tissue; for a glass of ale after a long walk would induce plentiful perspiration, and a glass of whiskey or gin and water acted with most people as a powerful diuretic. Nor could we conclude that it assisted in disintegrating the tissues; for, if it did, the use of ale, wine, or spirit must then be antagonistic or antidotal to food, and the wine-bibber must necessarily require more food than the teetotaler, whose tissues were not disintegrated by artificial means.

He then summed up his conclusions thus:

1. Nature has provided in the salivary glands the liver, and the lungs of every mammal an apparatus for converting food, espe-

cially farinaceous, into alcohol; and we have no evidence that such conversion does not take place.

2. One form of alcohol or another is available for the support of life, and for restoration to health when no ordinary food can be or is digested.

3. Alcohol, after being taken, is incorporated with the blood; passes into the various tissues, and ultimately disappears, a small portion only passing away in the breath. We can say no more of bread, potatoes, or oatmeal porridge, a small portion of each of which passes out of the body with the feces.

4. Alcohol, in the form of ale, porter, wine, &c., relieves hunger and quenches thirst simultaneously, and with a completeness that is not equalled by water, infusion of gentian, cayenne pepper, or by turpentine—i. e., it does not act as water simply, or as a stimulant alone.

5. Wine, beer, &c., satisfy the appetite when taken alone, and act, for the time, as any solid food would do.

6. When alcohol is mingled with other food, a less amount of the latter suffices for the wants of the system than if water had been used as the drink.

7. The various forms in which alcohol is taken have as marked and specific effects as have animal and vegetable articles of diet.

8. Individuals have subsisted wholly upon one or other of the various forms of alcohol in common use for periods of great length; and it is illogical to conclude that they must have lived on air, without food, or on flies, like chameleons—the conclusion is irresistible.

What that conclusion is, it might be left for every thinking man to decide.

The Vessels Concerned in the Production of Phlegmasia Dolens.

Before the Obstetrical Society of London, Dr. Tilbury Fox read a paper upon this subject. The author first referred to Dr. Mackenzie's experiments as insufficient to determine the question of the production of phlegmasia dolens, and proceeded to argue that venous obstruction is followed by oedema only, that the action must be the same, whether the obstruction be produced locally or indirectly through a vitiated blood condition. If any difference in the two cases existed, the changes over and above oedema, which characterize the lesion as phlegmasia dolens, must be ascribed to the action of the blood state (which is absent in the locally produced disease) upon the general texture of the limbs. If this view be adopted, the influence of the veins is *nil*, and we must look for the explanation in a special action carried on between the blood and the tissues. That the clinical history forbids the acceptance of such a doctrine, inasmuch as the very conditions (*viz.*, blood vitiation tending to produce "phlebitis") which are regarded as the cause of phlegmasia dolens, very frequently exist, and yet are very rarely followed by white leg—for example, in the various blood-poisonings unconnected with the parturient condition. That if produced under the circumstances mentioned, the disease ought not to be so frequently unilateral nor confined to the lower limbs. That the occurrence of white leg in cases of cancer, phthisis, pressure, &c., could not be explained hereby. That the death-rate of phlegmasia dolens forbid the same interpretation of the phenomena. That in the experiments of the injection of lactic acid into the blood by Dr. Mackenzie, there was no evidence to show that in the dogs operated upon, anything but oedema resulted. That the existence of phlebitis, except in the rarest features, is fallacious in cases of venous disease. Attention was then drawn to the dis-

inction between the coincidences and the essentials of phlegmasia dolens, as in the case of puerperal fever complicated by the latter. For example, take away from the general total of such a case the proper puerperal symptoms, and the phlegmasia dolens remains in perfect integrity: *per contra*, take away the hot, white, tense, elastic swelling, and the puerperal fever remains in its entirety.—In the combination, however, the pathological changes normal to phlegmasia dolens may be modified by the tissue actions (abscess, &c.) which are the consequences of the existence of a virus in the blood; in uncomplicated phlegmasia dolens, the tissues are passive, so to speak.

The succeeding remarks went to show that the theory propounded by White was correct with regard to the *nature*, though not as to the *cause*, of phlegmasia dolens; that in the natural condition, a large quantity of lymph travels from the limbs towards the thoracic duct, and when this current is impeded, markedly white leg resulted. The case of the absorption of a poison into the cellular tissue (which, according to some, controverts White's opinion) was examined, and it appeared that this might or might not be followed by phlegmasia dolens, according as the obstruction in the symptoms affected the main current, or merely some minor channels, (the latter being the rule); the swelling being modified in severe cases, as before observed, by the relative action of the septic blood state and tissues. Cases were quoted to prove that lymphatic obstruction is sufficient, and alone necessary, to give rise to phlegmasia dolens. The paper concluded with the following summary:

1. Phlegmasia dolens is a local disease.
2. No general symptoms need be present (implying absence of blood-poison).
3. Phlebitis, however produced, cannot give rise to phlegmasia dolens, but oedema only.
4. Phlegmasia dolens may occur in, but forms no necessary part of, blood-poisoning, (such as tends to phlebitis), but is modified thereby frequently; and any tissue conditions over and beyond the presence of fibrinous serosity, and the consequent hypertrophous state of the areolar tissue, are in nowise essential components of phlegmasia dolens, but common alike to very many different "blood" diseases.
5. Obstruction to the main lymphatic channels alone is capable of giving rise to white leg, and acts by preventing the removal of the lymph from the affected limb.
6. The obstruction may be the result of (a) extrinsic pressure; (b) thrombosis due to sudden (compensatory) absorption of vitiated fluid after sudden loss of any kind; (c) inflammatory changes in the vessels themselves (rare).
7. The effect of the action of venous obstruction upon the phlegmasia dolens is an intensification of the general swelling, and the presence of oedema during the subsidence of the enlargement of the limb.

Lastly, a frequent but unrecognized source of blood-vitiation was alluded to, namely—in cases where large tracts of cellular tissue were diseased—as in erysipelas, sloughing, cancerous, phthisical and dysenteric ulcerations and the like—the lymphatics charged with effete matter, and an excessive number of imperfectly developed pale cells, formed in their glandular part, poured their contents into the venous system from the thoracic duct; and this might be a cause of thrombosis at the right side of the heart and in the vessels leading to the lung.

The author wished to know how phlegmasia dolens resulted in cases where no trace whatever of venous disease existed post mortem? and how it was, supposing blood-vitiation and venous obstruction to be the cause, that sometimes oedema and sometimes

phlegmasia dolens resulted? why the swelling commenced sometimes above and sometimes below? why phlegmasia dolens, which was a greater degree of disease than oedema, resulting from blood-vitiation, (according to prevailing theories), possessed so low a mortality? It was evident in blood-disease, as appears from recent pathological inquiry, (especially brought out in the late discussion on puerperal fever at the Parisian Academy), that the lymphatics are as frequently affected as the veins, as in the broad ligaments of the uterus. A distinction must be drawn between thrombosis and inflammation of the lymphatics, which was usually due to septic poison, obstruction being uncommon, and certain tissue actions set going in answer to the blood state, modifying the whole character of any swelling. He did not throw cold water upon pathological facts, for the paper was based upon such; but thought that experimental evidence, such as that brought forward by Dr. Mackenzie, should not set aside clinical facts.

On Dislocations of the Thumb at the Metacarpo-Phalangeal Joint, showing that the difficulty of reducing arises from Malposition of the Tendon of the Long Flexor. By J. C. WORDSWORTH, Esq., F. R. C. S.

Many years ago my attention was particularly directed to the subject of dislocations of the thumb and fingers, by a case that occurred in the practice of the London Hospital while I was the house-surgeon. The cause of difficulty in reducing them was so plainly illustrated in this case that I was induced to publish a short notice of it in the pages of the *Lancet*, together with two other cases that seemed to confirm my conclusions. It had been previously stated, by various writers, that the strong lateral ligaments were the obstacles to reduction; and by other surgeons the difficulty was attributed to malposition of the tendons. Amongst the latter were the late Mr. Stanley in our own country, and Messrs. Lisfranc and Dupuytren in France. At the time I wrote I was not aware that such opinions had been published; I therefore gladly avail myself of this opportunity of disclaiming any credit for my share in the elucidation of this important subject, and am content to attempt to illustrate and confirm their opinions.

The case to which I refer was one of *compound* dislocation of the first phalanx of the thumb upon the dorsum of its metacarpal bone, in which the tendon of the long flexor was found between the ends of the bones, and thus accounted for the difficulty in restoring them to their proper positions. I will then briefly reproduce the essentials of these three cases: for though I have had many opportunities, both in public and private, of confirming this view of the subject, and of testing the practical value of it by reducing dislocations which have baffled others, yet I could not cite any that afford more satisfactory data for the solution of the question.

I gladly embrace this occasion to offer my sincere thanks to many friends, who, being aware of my interest in these cases, have afforded me numerous opportunities of seeing them; and I believe I am at liberty to state they fully approve and confirm what I have to offer on this subject.

Case 1.—A *compound* dislocation of the first phalanx of the thumb, produced by a fall on the extended hand, the phalanx being on the dorsum of the metacarpal bone. A wound extended across, and opened the joint on its palmar aspect. An attempt at reduction was made in the usual manner, simply by extension, and failed. A close scrutiny of the wound showed the tendon of the long flexor between the ends of the bones, having passed

round the *ulnar* side of the end of the metacarpal bone, and by traction been drawn across the joint. Various attempts were made to remove the tendon from its new position without doing further mischief; but these being unsuccessful, it was divided with a bistoury. Reduction was at once accomplished, and no displacement recurred.

This case, then, sufficed to convince me of the presence of the obstacle as well as of its sufficiency, affording as it did positive proof that the tendon prevented reduction, and that as soon as it was removed no obstacle remained. I then naturally desired to know whether this dislocation ever occurs without the complication of the misplaced tendon; and if so, are such cases difficult of reduction? A little reflection on the conformation of these parts convinced me that it was not a necessary condition of the dislocation, but rather an accident depending on the force and direction of the violence that produced it. Again, I was also persuaded that it must be possible to diagnose this condition; for if the tendon remained *in situ* it would be perceptible, stretching over the end of the metacarpal bone, and drawn away from the first phalanx by the altered position of that bone. I had not long to wait for a reply to these inquiries, for my next case afforded all the information that I desired, and justified my anticipations.

Case 2.—A simple dislocation upwards and backwards of the first phalanx of the thumb. A careful examination soon after the accident occurred, and before any attempt at reduction had been made, enabled me to decide that the tendon was *not* displaced from its position between the tubercles on the lower end of the metacarpal bone, but could be recognized as a distinct band (especially when slight traction was made) passing from bone to bone. Then, as to the reduction, slight force only was required to restore the bones to their proper positions—viz: by simple extension from the last phalanx.

Having, then, this positive and negative evidence of the difficulty arising from the interposition of the tendon, I next sought for the best means of overcoming it. I conceived that the tendon might be carried back to its proper place by manipulation merely, without having recourse to division, and so leave the structures uninjured. I therefore devised the following procedure, and determined to test its application as soon as an opportunity permitted. The wrist being fully bent, so as to relax the long flexor tendon, let the surgeon take the thumb in one hand and abduct it from the fingers, while with the other hand he steadies the metacarpal bone; he then is to rotate the thumb so as to make the tendon retrace its course *forwards* and *inwards* around the lower end of the metacarpal bone, using the first phalanx as a lever in this intention. If this does not succeed, let him hyper-extend the first phalanx, so as to stretch the flexor tendon, rotate the phalanx *outwards*, and then carry it round the *inner* tubercle of the metacarpal bone, so as to dislodge the tendon from between the ends of the bones.

Case 3.—A simple dislocation of the first phalanx upon the dorsum of the metacarpal bone. No trace of the tendon could be discovered. Attempts to reduce the dislocation by extension had been made, and were renewed, that the manipulation might be fairly tested after other means had failed. The tendon was readily replaced by this means, coaptation restored, and no tendency to displacement left.

I believe that I was thus enabled to place the argument on a basis so solid and satisfactory that it is impossible to resist its validity—indeed, that my cases reduced the matter to a demonstration. I will not dogmatise so far as to insist that all difficulty arises from the cause to which I was then induced to attribute it;

for I can easily conceive that cases may be complicated by the altered positions of the flexor brevis as well as by the lateral ligaments. Still, I am convinced how important it is in all scientific inquiries to be well assured of our conclusions; that we may know how to apply our science with energy and decision; and that it is both politic and philosophical to be content with *one* solution of a problem so long as it enables us to act with effect; though it is equally right that we should remain open to conviction, however satisfied we may be with our opinions, when they are shown to be either controvertible or inadequate.

Since my attention has been directed to these cases, I have had much reason to believe that dislocation of the fingers at the metacarpophalangeal joints are also complicated by the malposition of their tendons; and, acting on this conviction, I have succeeded in reducing them by mere manipulation, after considerable force had been vainly applied.

I am induced to call the attention of the profession to this important subject from noticing that the valuable surgical works that have emanated from the press of late have not embodied or endorsed this view of the difficulties. The ligaments are still considered the principal obstacles to reduction by authors generally, though I feel assured that a more extensive observation of these cases by the great body of practical surgeons will confirm my own convictions, and lead to the adoption of a better and more successful mode of treatment.

Purulent Conjunctivitis in Newly-Born Infants; Methods of Treatment. By Mr. ERNEST HART.

There is no disorder more commonly met with in the range of ophthalmic practice than purulent conjunctivitis in infants. And in hospital practice not only is the frequency of the disease very fully exemplified, but the disastrous consequences of its intensity and of the want of proper attention are witnessed in many cases of total blindness from resulting opaque staphyloma, where the eyeball itself has become involved in the destructive inflammatory action.

The greater number of these cases are due to inoculation by blenorrhagic matter from the mother; but neither on the one hand did every blenorrhagic mother infect her child, nor on the other did the disease arise in children solely from that cause. The opinion lately strongly expressed by Dr. Thomas Ballard, that the undue exposure of newly-born infants to strong light is a plentiful cause of the disease, is fully confirmed. Want of cleanliness is another. Moreover the affection appears, like other forms of conjunctivitis, to be occasionally almost epidemic. The early symptoms of the disease are well known to all practitioners. A little swelling and redness of the lids externally, and of the conjunctiva internally, with a gumming of their edges, and an escape of a lemon-colored fluid from between them, consisting of blood-pigment, serosity and fibrin, diluted with the tears. The swelling and redness increase, and an abundant purulent secretion soon occurs. Sometimes ectropion ensues from the excessive swelling of the palpebral conjunctiva. If the disease be not successfully combatted, corneal complications follow: infiltration at the edge of the cornea, and multiple ulcers; then death of the cornea, sloughing and escape of the lens, and staphyloma. This is the history which may be deciphered in the blinded and staphylomatous eyes of children. But happily these results may be considered as very rare and unlikely to accrue, if proper treatment is adopted in due

time. The disorder usually appears on the third or fourth day. It is often sufficient at this time, when the lids have just become stiff and congested, to apply a cold lotion, which is very well borne; to see that the eyes are sponged with tepid water (so that a stream runs under the lids) every hour; and to apply to the edge of the lids with a little brush the following ointment, the object of which is to prevent them from sticking together: citrine ointment, one drachm; olive oil, four drachms; lard to one ounce and a half. At the same time a laxative may be administered. When the symptoms are more strongly marked, and the purulent secretion established, more energetic means must be resorted to. The use of an alum lotion (four grains to the ounce) every hour, applied beneath the lids by a small sponge or syringe, is a very useful measure; and in hospital practice, when you cannot count upon seeing the little patient brought regularly and sufficiently often, and other attentions are commonly wanting, it is found that this treatment, by frequent irrigations with alum-water, yields better results and more rapidly arrests the disorder than any other. Where, however, the mother will give proper attention, and in all private cases, the application of *dilute caustic points* is employed and strongly advised; the application to be made to the palpebral conjunctiva, and followed by refrigerants externally. The *dilute caustic points* are prepared by melting nitrate of silver into stick, with one or two parts of nitrate of potash. Thus the degree of cauterization could be graduated at will. It is only necessary to pass the stick over the palpebral conjunctiva. The lid is to be everted for the purpose, and a little brush, impregnated with a solution of common salt, passed over the surface immediately afterwards, so as to neutralize any excess of caustic; and then the surface should be completely cleansed by the brush dipped in cold water. The effect of these cauterizations is startling in the success which attends them, if conducted with care and thoroughly performed. They need in most cases to be repeated several times, and in severe cases once or twice a day for a time. The inflammation soon assumes a healthy character. It is very rare to see any corneal complications, and the most formidable consequences of the disease are avoided. The instillation of strong nitrate of silver drops, &c., is condemned; radiating incisions of the conjunctiva are rarely necessary and sometimes mischievous; and excision of a portion of the mucous membrane is to be opposed. The application of a strong solution of nitrate of silver, as recommended by Dr. Mackenzie, is a useful resource where the solid dilute caustic points are not at hand, but when they are it is decidedly inferior.

Liquor Chlorinæ.—Put four grains of chlorate of potash, well pulverized in an eight ounce bottle; then add half a drachm of hydrochloric acid; cork the bottle well, and let it remain for about five minutes; then add gradually eight ounces of water, shaking the bottle constantly until the whole of the water be added. Dose, from an ounce to a drachm. This probably does not contain enough of the chlorate to be of much service. The following formula has been largely and successfully used: chlorate of potash, two scruples; hydrochloric acid, thirty minims; tincture of opium, ten minims to one drachm; syrup, half an ounce; water to six ounces. One drachm to one ounce for a dose. The opium prevents diarrhoea which frequently occurs during the administration of the chlorine mixture. For external application: chlorate of potash, one drachm; and one ounce each of the hydrochloric acid and water. Two drachms of this mixture to one pint of water makes an excellent detergent and stimulant application to wounds,

INTERESTING ANALYSES OF ARTICLES IN FOREIGN JOURNALS.

Observations on the Operation for the Division of the Ciliary Muscle. By HENRY HANCOCK, F. R. C. S.

During the three years which have elapsed since the operation for the division of the ciliary muscle was first introduced to the notice of the profession, it has been employed in various affections of the eye. The diseases in which it has proved most successful have been keratitis, sloughing of the cornea, staphyloma, dense opacity of the cornea, (in some cases of several years' duration,) and conical cornea; also in certain forms of amaurosis; in acute and chronic glaucoma, and in posterior staphyloma and myopia. Before, however, I enter upon the detail of these cases, I would explain the grounds upon which I have recommended this operation, inasmuch as some gentlemen who have written upon the subject have very erroneous opinions on the matter, and attribute ideas to me which I by no means entertain.

Although considerable attention has been paid to the structure and use of the ciliary muscle, no one has hitherto sufficiently insisted on the important influence which it exerts, in disease, upon the circulation and consequent nutrition of the eye-ball. The experiments of Cramer, Helmholtz, and H. Muller, whilst proving the value of this part in the "accommodation of the eye," show also that, in health, it possesses both elasticity and contractility; and whilst the experiments of Helmholtz demonstrate the influence which it exerts in the adaptation of the lens to the accommodation of the eye, we cannot overlook the influence which it must also exert over the cornea, sclerotica, choroid, and iris, in adapting them likewise, especially when its connection with these coats of the eye is borne in mind. Heinrich Muller distinguishes two sets of muscular fibres in the ciliary muscle: *external* or *radial*, springing from the inner wall of Schlem's canal, and passing outwards and backwards, to be inserted both in the sclerotic and choroid; an *internal* or *circular*, running parallel with the corneal margin, and situated principally in the antero-interior part of the muscle, near the insertion of the iris. As a whole, we find it closely connected with the line of junction between the cornea and sclerotica, the choroid and iris; and receiving the middle portion of the posterior elastic layer of the cornea, whilst the most anterior portion forms distinct columns, constituting the pillars of the iris, (Bowman,) or "ligamentum iridis pectinatum (Huck). "It is continued with the iris, and is closely attached to the circular sinus of Schlem, connecting the iris at this point and constituting a bond of union between it and the ciliary processes. The retina likewise terminates in its ora senata at the posterior edge of this muscle. The long and several of the anterior ciliary arteries pass through it, as well as many of the posterior ciliary arteries, in their passage from the choroid to the iris; whilst the choroidal veins, having reached the ciliary muscle, turn with a sharp curve along it, and, uniting, form a nearly straight horizontal vessel, of considerable size, along its posterior edge. The ciliary nerves also run through it, ramifying freely throughout its substances." (Nunneley: "Organs of Vision," p. 168). And although absorbents have not been demonstrated in this structure, it may fairly be inferred that this arises from their extreme minuteness, rather than from their non-existence.

From the above description we gather that the so-called ciliary muscle is a body possessing, in the natural state, both elasticity and the power of contractility, exerting the power of accommodation of the eye to various foci, and permitting the transmission of blood-vessels, nerves, and, in all probability, of absorbents, through it, without interruption to their functions.

In a paper on Glaucoma (The Lancet, January 26th, 1861), Mr.

Nunneley writes—"Mr. Hancock believes the disease does not depend upon hypersecretion of the vitreous humor owing to disease of the choroid coat, but that it essentially depends upon continuous spasm of the ciliary muscle, which, according to him, induces the hardness of the globe of the eye." Whilst Mr. Haynes Walton, in the last edition of his work on "Surgical Diseases of the Eye," observes—"It is not probable, I think, that such a muscle as the ciliary could contract with sufficient force to groove the hard and stony eye-ball of glaucoma, still less likely is it that such spasm could be continuous."

I have never believed, nor have I ever stated, that glaucoma is caused by spasm of the ciliary muscle, whether persistent or temporary. I have stated that, in my opinion, the ophthalmoscopic and pathological appearances of the *blood-vessels* were greatly enhanced by, if not in some instances entirely due to, the obstruction of the circulation caused by the undue and excessive constriction exerted on them by the spasmodic or *extreme contraction* of the ciliary muscle; but I have never, as yet, said anything about the ciliary muscle inducing hardness of the globe of the eye, nor of its contracting with sufficient force to groove the "hard and stony eye-ball of glaucoma."

I believe that glaucoma is not caused by hypersecretion of the vitreous humor; but that it has its origin in some peculiar condition of blood, considered by most ophthalmic surgeons as gouty or rheumatic—a view of the question most ably supported by M. Canton, in his admirable papers "On Atrophy and Degeneration of the Arteries," and confirmed by the writings of Lawrence, Siehel, Mackenzie, Tyrrel, Bell, as well as by the dissections of Eble and Rosas; that the muscular fibres and blood-vessels become implicated, as sooner or later do the heart and blood-vessels, in that disease; that the ciliary muscle, losing its elasticity and contractility, is converted into a rigid, unyielding cord. The eye is consequently deprived of its accommodating power, and the blood-vessels, nerves, and doubtless the absorbents, from their peculiar arrangement with reference to this muscle, being compressed, the circulation through these vessels is impeded; their coats, already weakened by the existing disease, yield, form aneurismal pouches, give way or become varicose. The parts supplied by these vessels, nerves, &c., are deprived of their nourishment, whilst the intra-ocular effusion or hypersecretion takes place subsequently to, and results from, these morbid changes.

In the case which I related in the Lancet for 1859, the attack came on so suddenly after exposure to strong light, without any premonitory symptoms, and was attended with so much acute pain, that I have no doubt the constriction, in this case at all events, resulted from spasmodic contraction perpetuated by the intensity and persistence of the disease. In other instances, however, when the disease progresses more slowly and insidiously, when there is gradual and progressive degeneration of structure, I can readily understand that the ciliary muscle should become implicated and converted into a rigid, unyielding, inelastic ring, from that cause, rather than spasmodic contraction; but although I firmly believe that these two conditions do exist, I am bound to admit that I cannot adduce any dissertations in support of this opinion, as in no instance has the operation for the division of the ciliary muscle been followed by any symptoms which would render extirpation of the eye-ball justifiable.

Mr. Haynes Walton seems to think that the hardness of the eye-ball precedes the constriction of the muscle, and that I believe the muscle, by its contraction, actually draws in the distended coats forming the sulcus met with in glaucoma and other diseases of the eye. On the contrary, I believe the contraction, whether spasmodic or otherwise, precedes the hardness, and that whatever influence the muscle exerts in these cases upon the coats of the eye is of a passive rather than of an active nature; that, in other words, it does not "groove" and draw the coats of the eye in, but

that it prevents the coats of the eye expanding at this point; hence a given quantity of fluid effused within the eye-ball would render it more tense than when such a condition of the ciliary muscle does not obtain, and this may easily be verified by the following experiment: I took a piece of the intestine of an ox, and having placed an elastic India rubber ring around it, I forced in as much water as it would hold by means of a bladder syringe; of course, as the water was forced in the ring expanded, and the intestine became uniformly tense, and by measurement I found the quantity thrown in was forty two ounces. I then removed the India-rubber ring, and substituted a ring of string of the same size as the India rubber ring when not expanded, and I again injected as much water as I could; but as the string was inelastic, the gut was constricted at the point encircled by it, whilst the quantity of fluid measured only thirty-three ounces, so that the loss of elasticity diminished its capacity by nine ounces.

Whilst the division of the ciliary muscle, by doing away with constriction, diminishes the tension of the eye-ball and the consequent intra-ocular pressure, it appears to me that the most important result of the operation is its effect upon the blood-vessels, nerves and absorbents, in removing the obstruction to the circulation and increasing nutrition; whilst a result of almost equal importance is the recovery of the accommodating power of the eye. It is, however, objected that these cannot, by any possibility, be effected by the operation which I recommend.

Mr. Nunneley observes (The Lancet, Jan. 26th, 1861):—"It cannot, however, be at all difficult to show that neither the theory nor the practice, as applicable to the theory of Mr. Hancock, can possibly be true. * * * Supposing the ciliary muscle were really hypertrophied and in a state of tonic spasm, how could it induce hardness of the whole globe of the eye, flattening of the cornea, and much intra-ocular pressure? * * * The fibres are not circular, but straight, and not more than one-seventh of an inch long. They can have no action whatever upon the schlerotic coat, to which they are not attached posteriorly. They cannot, therefore, render it hard." And he adds: "But even were this theory of compression by the ciliary muscle as true as it appears untenable, how could a simple puncture in the direction of its fibres interfere with the entire circle of its fibres? A broad, transverse incision in the direction of the corneal curve, by dividing the fibres, might act powerfully in proportion to the number of fibres divided; but that a simple momentary separation from each other of two or more adjoining parallel fibres, without any division of their structure (for such must be the effect of a fine, sharp, thin knife), could permanently arrest strong spasmodic action in an entire muscle spread over a large circle, it is impossible to conceive."

It is somewhat surprising that a gentleman professing to be an authority on the minute anatomy of the eye-ball should so decidedly commit himself to the assertion, that the fibres of the ciliary muscle are not "circular," but "straight." H. Muller has shown that the ciliary muscle consists partly of straight and partly of circular fibres, and it is difficult to understand what Mr. Nunneley actually means when he talks of the ciliary muscle as a set of unconnected straight fibres, not more than the seventh of an inch long, and then immediately describes it as "an entire muscle spread over a large circle." It will readily be granted that both these conditions cannot obtain. If it is merely an arrangement of unconnected, straight, radiating fibres, it cannot be an entire muscle; if, on the other hand, it is an entire muscle, then the fibres must be connected, in which case his objection, that in my operation the effect of the incision by "the fine, sharp, thin knife must necessarily be limited to a simple, momentary separation from each other of two or more adjoining parallel fibres, without any division of their structure," is of no value. But, perhaps, Mr. Nunneley will inform us how (even if the fibres are unconnected) it is possible so to introduce a fine, sharp, thin knife in the course of these fibres, as to cause a simple, mo-

mentary separation of *more than two* adjoining fibres, without at the same time dividing structure; and, also, how it is possible to make an oblique incision, of an eighth of an inch long, across the ciliary muscle, (as in my operation), without at the same time cutting through the muscular fibres, even were their arrangement such as described by Mr. Nunneley.

Mr. Nunneley's assertion, moreover, that the fibres of the ciliary muscle are not attached to the schlerotic, is entirely disproved by the investigations of H. Muller, who has traced them from the inner wall of Schlem's canal to their insertion into both schlerotic and choroid. He forgets that a minute portion of the ciliary muscle, teased out upon the object-glass of a microscope, does not represent that muscle as it exists in the natural state; and he forgets, also, the following description of the ciliary muscle, given at p. 175 of his own work on the "Organs of Vision," published in the year 1858:—"If the schlerotic be divided about the third of an inch from the cornea, and the portion with the cornea be carefully detached, we find a whitish-gray circle about four-thirtieths of an inch broad, extending from the junction of the schlerotic and cornea backwards upon the choroid. *It is always a circular belt*, even in those animals, &c. *This substance has received various names, as ciliary circle or ring, ciliary ligament, ciliary ganglion, and ciliary muscle*, according to the notions which have been entertained of its structure and functions." It is this whitish-gray circle, this circular belt, this ciliary circle or ring, this ciliary ligament, ganglion, or muscle, which is cut through in the operation which I have proposed. I am ready to admit that if the part did consist merely of a collection of unconnected fibres, the introduction of a knife between, and in the course of, any two fibres would be useless; but where a circle of radiating fibres—I care not how large that circle may be—is rendered a connected whole by circular fibres and other uniting tissue, the solution of that whole by the division of these circular fibres and connecting tissue, even though the radiating muscular fibres are left untouched, must effect a very important influence over the entire circle, especially where from preceding disease that circle has been deprived of its elasticity, and is consequently constricting the parts passing through it, as in the case of the vessels, nerves, &c., passing through the ciliary muscle.

Whilst, as we have seen, some gentlemen have endeavored to depreciate the value of this operation, others have assumed to themselves the credit of originality by altering the direction of the incision. I would submit that these proceedings savour in no slight degree of plagiarism, since in all the principle is the same—the division of the ciliary muscle; and whether this object is attained by making the cut obliquely, as I have recommended, or straight or along the curve of the cornea, it can make but little difference, so long as the muscle is divided and the transparent cornea is not invaded. In the latter case the incision is mostly followed by effusion of blood into the anterior chamber and protrusion of the iris through the wound; and although the blood is usually absorbed in two or three days, the protrusion of the iris causes great and unnecessary pain. These accidents, however, should always be regarded as the fault of the operator and not of the operation.

This operation has been performed in a wide range of diseases, such as cases of conical cornea, staphyloma corneæ, staphyloma scleroticæ keratitis, posterior staphyloma, amaurosis, irido-choroiditis, and glaucoma. The relief which has resulted from its employment, considered in connection with the anatomical relations of the ciliary muscle, appear to me to prove most incontestably the important influence this muscle must exert in a pathological point of view in certain diseases of the eye, by interrupting the circulation, nervous influence, nutrition and consequent power of reparation of the organ. It is difficult otherwise to account for the results afforded in cases of conical cornea. In one case the projecting cone, attenuated to the greatest degree at its apex, gradually flattened down and resumed the original shape and uniform con-

sistency of the natural cornea. It is equally difficult otherwise to account for its effect in cases of staphyloma of the cornea, a progressive disease, having a great tendency to increase in thickness and consequent projection. In one particular case the operation was followed by gradual absorption of the interstitial deposit and flattening of the cornea, so that the patient, previously unable to close his lids, was relieved from that inability and its consequent deformity and suffering. So likewise in a case of staphyloma scleroticæ. Here the pigmental coat of the choroid could be seen through the sclerotica, threatening absorption of that coat, and causing it to bulge so much behind the cornea as to prevent closure of the eyelids. After the operation the bulging subsided, the patient could close the lids without difficulty, whilst the sight of the eye was improved.

Again, in leucoma, or long continued dense opacity of the cornea, we have three cases. In one, the patient, previously blind for nine months, had by the division of the muscle the transparency of the greater portion of the cornea restored, and recovered sufficient sight to enable him to earn his living by cleaning horses, cutting chaff, and following the employment of a coal porter. In another case, the patient, previously blind for six years, recovers the transparency of the cornea, and the power of distinguishing objects; whilst the patient in the third case, who was previously blind for twelve months, and was dismissed from one of our largest hospitals as incurable, had the transparency of the cornea restored so that she was able to read the large type heading a newspaper.

As might be expected, the improvement in these cases is very gradual. In successful cases, the circumference or margin of the leucoma becomes jagged, irregular—as it were, broken up, and at last transparent; and this process continues towards the centre until the cornea becomes clear. When the case has become complicated by the effusion of lymph on the iris and pupil, the transparency of the cornea has in most instances long preceded the absorption of the latter.

Then, again, in blindness from corneal opacity of more recent duration, as in keratitis. Among other cases, was a patient blind for six weeks with complete opacity of the cornea, intense pain and intolerance, at once freed from suffering by the operation, and restored to sight by the gradual recovery of the transparency of the cornea, so that she was able to read the smallest type, do any kind of needle work, and support herself as a nursery governess.

There is not a more striking result of the operation than the almost immediate relief from pain which in many instances succeeds its performance, even in cases where restoration of sight is hopeless; and I consequently often operate for this object solely. For instance, an old lady lost the sight of both eyes from glaucoma in one eye for four years, in the other for eighteen months. She could not see light from darkness, but the pain in her eyes and head was most severe. I divided the ciliary muscle in both eyes, and in three days the pain was gone; and although as I expected, no improvement of sight resulted, she was made happy by the relief afforded. Another patient, in relation to this point, said that something gave way at the time of the operation, when he immediately felt easy.

The cases of posterior staphyloma, with near sight, prove the value of this operation as a means of restoring the "power of accommodation" to the eye. I do not, however, recommend it as a substitute for spectacles, but only in those cases marked by a gradual and persistent shortening of sight, in which glasses afford no assistance; and I would here refer to a case wherein both eyes were operated upon. One was not benefitted, but the other was to so great an extent that, by the patient's own desire, I repeated the operation on the uninjured eye with the happiest results.

In cases of amanosis the operation has been performed successfully where the eyes have presented the opposite ophthalmoscopic

appearances of congestion and anæmia of the choroid and retina; and I have been asked upon more than one occasion how I can reconcile this apparent anomaly with what I have advanced as to the influence of the ciliary muscle in disease. "If division of the ciliary muscle relieves and cures a congestion of vessels, intra-ocular pressure, &c., how can it cure atrophy of the same vessels?" It seems to me that the question is at once answered by what I have all along insisted upon—"that the ciliary muscle is not the cause of the original disease, but that it sooner or later becomes affected by that disease;" and that from whatever cause the loss of its elasticity and contractility may arise, the effect upon nutrition and the powers of separation is the same, and its division equally necessary. We can readily, therefore, understand, that in some conditions of constitution, in certain forms of inflammation, or from an accident neglected, a state of low inflammation or passive congestion of the tunics may precede and cause this abnormal state of the ciliary muscle, requiring its division equally as when this state results from that peculiarity of constitution leading to atrophy or fatty degeneration. Nor is it unreasonable to conjecture, that the extent to which the nerves are involved would in no slight degree influence the condition of the blood-vessels.

In irido-choroiditis, this operation is only applicable to recent cases, in which the pupil is free, and there are no adhesions between the iris and capsules of the lens. When the pupil is more or less obliterated, and such adhesions are present, this operation does not hold out the same prospect of relief as iridectomy. But before any operation is performed we should be careful to ascertain, if possible, whether the patient is laboring under any other complaint, particularly one entailing more or less drain upon the system. In one of my cases, the young lady conceded the fact of her having for a long period suffered from hæmorrhoids. When, however, she revealed the fact, and had undergone the necessary operation, the improvement was too great and decided to admit of a doubt of the extent to which the irido-choroiditis was aggravated by the continued loss of blood.

In directing attention to cases of glaucoma, I am now in a position to state that not only has the operation benefitted the patients; but that the benefit has proved persistent—a sufficient answer, I should imagine, to those who, without giving it a trial, have opposed the operation, and asserted that its effects could only be temporary. And, in conclusion, I would briefly refer to the abstract of Mr. Bowman's paper, lately read before the British Association. In a paper which I published in No. 12 of the "Ophthalmic Hospital Reports," I expressed the belief that the success of iridectomy depended upon the division of the ciliary muscle, and that in process of time it would be found that the extent of the incision hitherto practised in that operation might be materially diminished, and the tearing away of the iris altogether dispensed with. Although Mr. Bowman has not paid me the compliment of noticing this opinion, I am happy to find from his paper that his views are approximating to it, and that, abandoning his original conjectures as to the *modus operandi* of iridectomy, he now states, "As to the action of iridectomy in relieving glaucoma, he did not wish to speak confidently. It might be the removal of part of the secreting surface of the iris, but it appeared that it was *not due so much to the quantity removed as to the exactitude with which it was removed at its attached border.*"

Alkaloids and Alcohol—A Cabinet order, published in the Prussian *Moniteur*, directs that the brandy served out in the Prussian army shall be henceforth replaced by coffee. Each man will receive two-fifths of an ounce per day in time of peace, and half an ounce in time of war.

Treatment of Chronic Dysentery with Ipecacuanha. By Dr. WILLSHIRE, of Charing-Cross Hospital.

The first essential thing was stated to be the plating of the patient in the most complete state of repose possible, and not allowing for one moment the intestines to drag down by their own weight, and thus to excite, or at any rate to increase, the tenesmus and tormina. Hence the patient must be rigorously confined to bed, and not allowed to rise even for the purpose of evacuating the bowels. The latter object must be effected by means of the bed-pan. Under no entreaties is the patient to be permitted to rise at first, even when he asserts he is much better. The second object is to give the bowels as little to do as possible in the way of being called upon to evacuate the unconvertible and refuse material of diet. Hence such food alone must be given as leaves the least amount of excrementitious matter behind it. A baby's diet is the one to be adopted. Milk, eggs, isinglass, gelatine, rice, and analagous non-irritating articles, must be adhered to most strictly. Such things, whilst they are nutritious, make but little fecal matter which can irritate, in its passage through the intestinal canal, the already irritable bowels. The next thing is to apply gentle counter-irritation and warmth to the abdominal surface. They may be alternated one with the other, or used singly, or repeated for a time according to circumstances. Lastly, as far as his (Dr. Willshire's) experience went, the remedial treatment should consist mainly of the combination of opium with certain gastro-intestinal sedatives and astringents, viz: bismuth, bael, ipecacuanha, and logwoods. Of bael and ipecacuanha a very high opinion had been formed by many and experienced Indian practitioners. He himself had used the former in several hospital and in one or two private cases, and had formed a good opinion of its powers in checking what he should prefer to consider as chronic diarrhoea or dysenteric catharsis rather than as analogous to true chronic dysentery. In the case cited, it would be seen that the bael, though apparently affording relief at first, failed to continue it, and that a relapse was the consequence. It was not until what some have deemed almost a specific for dysentery—viz: ipecacuanha was administered, that marked and permanent improvement followed, the blood disappearing from the stools, the mucous becoming less in amount, and finally the dejections appearing consistent. The ipecacuanha had here been employed in small doses only. Had these not been followed by good effects, he should have given the usual larger ones, such as twenty-five grains or half a drachm every four or six hours. But as ten grains three times in the day seemed to be sufficient, he had left well alone, and it was seen with good consequences. The extract of hæmatoxylon had been employed in this case, and, speaking generally, he thought it well adapted for dysenteric catharsis. He had got into the habit of employing it from witnessing its good effects in the milder forms of "entero-colitis" in children. In those little patients, the diarrhoea often became dysenteric, and indeed bad cases of it were really those of true dysentery—in other words, entero-colitis. Suffice it to say, in such like instances, hæmatoxylon acted as a sedative astringent, or as one perfectly devoid of any irritant character, and would be frequently found to be followed by a diminution of intestinal discharge, when other drugs either produced no such effect, or seemed to make it more copious or frequent. One or two cases had been recorded in which the arrest of chronic diarrhoea by hæmatoxylon had been followed by *phlebitis* of the veins of the lower extremities, and such a result was regarded as specifically belonging to the action of logwood. He himself was quite ignorant of any ill effect from its use.

On the Arcus Senilis.—This is the occurrence of a little band of pearly whiteness around the edge of the cornea, which had long been noted and named, but was little thought of either by surgeons or patients. Mr. Canton has ascertained that this change, so fre-

quent in old age, is due to "fatty degeneration" of the corneal tissue. Immediately that the pathological characters of this change were discovered, it was possible to determine the relation in which it was likely to stand to similar changes in other and concealed organs. For this is the privilege which observers possess in watching the progress of disease in the eye, or in interpreting the significance of its pathological alterations, that from the seen they may argue to the unseen; and so the pathology of the eye may afford the best light for aiding in the diagnosis of disease in other parts of the system. Mr. Canton set himself to determine the semilogical value of this fatty degeneration; and as to the success of his search we may quote the verdict of M. Paget, who says: "The arcus seems to be, on the whole, the best indication which has yet been found of proneness to an extensive or general fatty degeneration of the tissues. It is not, indeed, an infallible sign thereof; for there are cases in which it exists with clear evidence of vigor in the nutrition of the rest of the body; and there are others in which its early occurrence is due to defective nutrition consequent on purely local causes, such as inflammatory affections of the choroid, or other parts of the eye. But, allowing for such exceptions, it appears to be the surest, as well as the most visible sign, and measure of these primary degenerations." Mr. Canton adopts this view, and does not desire to place a more positive or dogmatic interpretation on the sign which he has pointed out, than facts give it. Dr. Watson, in his "Practice of Physic," in speaking of the arcus, observes: "The cornea is sometimes alone in suffering the change. I am acquainted with a gentleman, under forty years of age, who, enjoying excellent health, presents a well-pronounced arcus in both eyes, especially at the summit and at the base of the circle, and in whom that appearance has remained unaltered, certainly since he was twenty-four years old, and perhaps from an earlier date. But Mr. Canton calls to mind that the apparent enjoyment of excellent health is no argument in favor of the non-existence of fatty degeneration of the heart; and in proof of this state refers to recent notable deaths, in which the autopsy revealed the existence of fatty degeneration of the heart, although excellent health had previously been enjoyed. No doubt it is important that the frequent exceptions to this coincidence of general fatty degeneration with the "arcus" should be borne well in mind, for otherwise a considerable source of hypochondriacal fears would be added to those which already torment the world. But the arc occurring in young persons or adult men is a sign—a rainbow in the sky—which the surgeon or physician should not neglect.

Topical Injections of Strychnine.—M. Courty, Professor of Surgery at the Faculty of Montpellier, having succeeded in controlling severe neuralgic pains by injections of strychnine, tried them likewise in paralysis of the facial nerve, as well as the loss of power of movement in other parts. In different cases of paralysis, and especially in chronic cases, the result was most favorable. The author, succeeded, however, in a case of paraplegia; the patient, a woman aged forty-five, having been thus paralyzed for twelve months, many remedies had been tried; but a few injections of strychnine on a level with the inferior extremity of the spinal marrow sufficed for the cure. Success was also obtained in three cases of recent facial paralysis. The first patient was a man of fifty-six; the second, a lady of twenty-five, and the third a young lady of twenty-two. They were all in the early stage of the disease; and the strength of the solution varied from one in a hundred to one in seventy. A few drops (from eight to sixteen) were injected along the course of the facial nerve, between the stylo-mastoid foramen and the neck of the lower maxilla. The injection was repeated every second or third day. All the muscles of the face recovered the faculty of movement after from three to six injections, in about ten days or a fortnight. The author states that no relapses have taken place in these cases.

Chylous Urine Successfully Treated by Tincture of Muriate of Iron.—Dr. Dutt relates the case of a Hindoo, aged twenty-four years, who reported himself to have been suffering from chylous urine for four years, during which time he had been under several practitioners, and had taken a variety of medicines, but with very little benefit. On examining a specimen of his urine it was found to be of a milky-white color, thick, and full of coagula. There was no pinkish tinge in it. It was not examined for sugar. The patient stated that at the commencement he had slight pain in the region of the right kidney, but that it was removed by a blister, which, however, did not produce any effect on his morbid urine. He was dyspeptic; but his general health was good, and there was no evidence of any visceral disease or any local affection of the lymphatic system. The peculiarities of this case were that the urine passed during the day was clear and free from chyle, while that voided during the night and in the morning was deeply loaded with it. At night micturition was frequent, and the urethra would sometimes get blocked up by coagula. He was very much subject to night emissions. He was at first treated for dyspepsia, which did nothing more than improve his appetite. For this purpose he was given tonics, anti-acids, &c. Gallic acid was then tried, in three grain doses, three times a day, for five days, but with no better success. In fact, the symptoms were aggravated while under this treatment. He was then ordered fifteen minims of tincture of muriate of iron, in an ounce of infusion of quassia, to be taken three times a day. Before he had taken the medicine for three days the improvement in his urine was marked, and at the end of the week it was entirely free from chyle. He was kept under observation for more than four weeks after this, and the drug intermitted for a week, and his urine continued free from chyle. He was discharged cured. There are one or two points in connection with this case worthy of note: Was there any connection as cause and effect between the dyspepsia and the chylous urine? This question must be answered by others; but it is quite evident that there could not have been any organic lesion excepting a slight irritation of the right kidney at the outset. The night emissions may have been due to some irritation existing at the mouth of the bladder; the patient remained subject to them long after the urine had ceased to present any trace of chyle in it.

What is Carbolic Acid?—Dr. Frodsham, writing to the *Lancet*, says: "In reading the remarks made by Dr. Calvert and other gentlemen, describing the therapeutic properties of carbolic acid, one would be led to believe in this as a new therapeutic agent, and that this substance possessed some peculiar medicinal properties inherent in itself, whereas, under the name of creasote it has been used extensively in medicine for years; pure German creasote being identical, medically and chemically, with carbolic acid, the chief difference seeming to be that carbolic acid can be obtained in crystals, which, however, on contact with the air, assume the liquid form." Professor Gregory says: "So great is this resemblance, that I am inclined to consider creasote as a somewhat impure carbolic acid, the impurities being substances homologous with carbolic acid, or rather the carbolic acid is the impurity in a body belonging to the same homologous series; the taste, smell, density, boiling point, solubility in water, poisonous and antiseptic action of these two bodies as the same. These results I have myself also obtained, and it would appear that if creasote be not carbolic acid contaminated with some foreign matter, these two bodies are, at least, closely connected and belong to the same series, which is either that of benzole or that of phenyle? (*vide* Gregory's 'Handbook of Organic Chemistry.') Perhaps Dr. Calvert will kindly inform us whether his researches have thrown

any additional light on the investigations of Professor Gregory and Liebig as to the chemical composition of this substance, and also in what manner its medicinal properties differ from those of creasote?"

Extreme Mobility of both Kidneys.—Mary J —, aged forty-two, married, the mother of ten children. For the last ten years the patient has felt a tumor in the right side of the abdomen, about the size of a turkey's egg; and within the past few years she became aware that a similar tumor existed in the left side. Sometimes she was not able to discover either tumor, and therefore imagined that the swelling moved from side to side, or that it disappeared at times. She has never suffered pain or other symptom in connection with the tumors, nor has any increase in size taken place. During the last few years she has become extremely nervous and excitable, passing sleepless nights, imagining she was the subject of some serious disease. Upon examination, a tumor is easily discovered in each lumbar region upon relaxation of the abdominal parietes. Their form and size resemble the kidneys, smooth on the surface, with a distinct rounded and hollowed border. When the hand is placed upon either tumor, no pain is felt, but upon rather firm pressure, a peculiar sickly sensation is complained of. These tumors are distinctly movable, especially downwards and forwards, in the latter direction as far as the outer border of the rectus abdominis muscle. During the examination, the tumors once or twice glided away, and were again to be sought for. The urine perfectly normal, the lungs and heart healthy. The patient is very nervous and apprehensive of her condition. She was assured that no disease existed; and that these supposed tumors were to her a natural condition, being an "extreme mobility of the kidneys." A change of air and scene was recommended, with the administration of a mild tonic.—*Lancet*.

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ORIGINAL COMMUNICATIONS.

ART. I.—*Tetanus and Tetanic Spasms.* By M. H. HOUSTON,
P. A. C. S.

True Tetanus manifests itself by tonic contractions of the voluntary muscles, believed to be dependent on some persistent organic change in the medulla oblongata and spinal column. The essential character of this change has eluded thus far the researches of the scalpel and microscope, whilst its removal has baffled, in most cases, the best directed efforts of the most skillful physicians. It may be inflammation, it may be malassimilation, or it may be imperfect transformation of the tissues. Whatever it may be, it seems to have its seat in the nerve centres, and not in the branches. As indicative of its central seat, and in acknowledgment of his ignorance of its true nature, Mr. Travers, more than thirty years ago, gave it the name of constitutional irritation, and, for any light that has since been thrown upon the subject, the name may as well be retained.

This centric or constitutional irritation may be idiopathic, requiring for its development some accidental cause; or it may be traumatic, in which case, the central lesion is the result of long, continued irritation of the peripheral nerves.—Hence, all cases following wounds, are not to be considered traumatic, as in many cases the wound only acts as the exciting cause. The mine having been laid by some remote cause, the injury acts as a spark in producing the explosion.

A very concise history of cases will best illustrate the difference between these two varieties of tetanus. For reasons which need not be mentioned, I am compelled to give them entirely from memory.

Case 1.—A stout coal digger, between thirty and forty years of age, and apparently of good constitution, had compound fracture of the left leg, from the falling in of a coal bank. He had some other slight injuries, but the pain which he suffered during the first two days, was not greater than is usually consequent on such accidents. On the third day, he complained of sore throat and a sense of stiffness about the muscles of the jaw, with some difficulty of swallowing. Tetanus was gradually but steadily developed, and in three or four days it proved fatal.

Case 2.—A healthy looking negro girl, sixteen years of

age, ran a nail into the bottom of her foot. A piece of fat bacon was applied to the wound and she was permitted to go about as usual. On the third day, she complained of some difficulty of swallowing and *soreness all over*. The tetanic spasms were developed slowly and insidiously, and it was not until the fifth day that they could be considered well pronounced. The tonic spasms were more persistent and the paroxysms less violent, than in other cases I had witnessed. She died ten days after the receipt of the injury.

Case 3.—A stage driver was thrown from the top of his stage, on a pile of stones, and had comminuted compound fracture of the right leg. There were many sharp spiculæ of bone, with considerable laceration of the soft parts. He suffered great pain in the seat of injury, and for some days there was much twitching of the muscles of the limb. This painful condition of things continued, with varying severity, until nearly the end of the fourth week, when tetanus set in, with its ordinary symptoms, and put an end to his life in two or three days.

This is a concise statement of the important features in these three cases, the two first of which I consider as idiopathic, and the last purely traumatic. In the first, the centric disease—the constitutional irritation of Mr. Travers—existed at the time the injury was received, and the wound acted as the exciting cause only; in the last, the centric disease was produced by the protracted irritation extending from the periphery to the centre, and the injury was both the remote and the exciting cause. In the two first cases, the spasms occurred too soon after the receipt of the injury, and the local irritation was too slight to justify the belief that the centric disease was caused by the local injury.

In the third case, the local irritation was greater than in the other two, and yet nearly five weeks elapsed before any manifestations of centric disease displayed themselves.

This distinction is important as bearing upon the question of amputation, in such cases as involve the certainty of protracted, painful, local irritation. The history of tetanus proves that amputation would have had no effect in preventing the fatal result in the two first cases—indeed it seems more than probable, that any operation, would in itself have proved sufficient to bring into activity the latent constitutional irritation. Nor would amputation have prevented death in the last case, if performed after the development of the tetanic spasms, for the reason that the centric disease being established, its

effects would continue after the removal of the traumatic cause. On the other hand, it is quite reasonable to believe, that if amputation had been performed at any time within the first three weeks after the accident, the constitutional irritation would have been avoided, and the development of tetanus prevented. In determining, therefore, upon the propriety of operating in any particular case, the probability of secondary tetanus from protracted local irritation, presents an important consideration. If the term traumatic be retained, in all cases following wounds, then it may be laid down as a general rule, that any operation will prove worse than useless in primary development at whatever stage it be performed, whilst if early performed, it may prove efficient in arresting secondary tetanus.

But it may be asked, what evidence have we that in such cases as those just narrated, there exists any organic change in the nerve centres? In the absence of any appreciable anatomical lesion, we are left to infer its existence from a close observance of the symptoms, in their difference from other varieties of tonic contraction of the voluntary muscles.

Still, assuming that mere tonic contraction of the voluntary muscles, whether dependent or not upon organic change in the nerve centres, constitutes tetanus, we have other varieties of the disease which may as well be illustrated by the history of a few cases. In this category I do not include those spasmodic contractions of the muscles of a limb, which so often follow fractures, and which are sometimes dignified with the name of tetanic spasms. These are just as independent of the condition of the nerve centres as are the cramps of a muscle from fatigue and exposure, to cold. They are, however, significant of the severity of local irritation, and should always be well considered in determining questions of amputation. They were well marked in the third case related, and yet tetanus did not supervene until near the end of the fourth week. In the class of cases to which I now refer, most of the voluntary muscles are involved, producing regular trismus and opisthotonos, of longer or shorter duration. The following case will be recognized by most practitioners as an old acquaintance:

Case 4.—Many years ago I was asked by a gentleman of no inconsiderable experience in his profession, to visit with him what he considered to be a case of tetanus. The patient was a strong looking girl, eighteen or nineteen years of age. At the time we entered her room, she presented an exaggerated appearance of both trismus and opisthotonos. The muscular contractions continued firm during many minutes, when they suddenly relaxed, and she fell into a state of perfect tranquillity. She continued thus quiescent for ten or fifteen minutes, when giving a sudden start, she immediately repeated the muscular phenomena above described. A few inquiries satisfied me that this was clearly a case of hysterical tetanus, dependent on dysmenorrhœa. The highly impressible nerve centres were aroused into activity by the uterine irritation, and diffused their influence through the voluntary muscles. As long as the uterine irritation lasted, the tonic contraction of the muscles continued with great violence. When one intermitted, the other followed its example, and both were re-

newed simultaneously. They were both permanently relieved by an injection of morphia in camphor emulsion.

Case 5.—A stout young Scotchman, twenty years of age, had a slight chill, which was followed by high fever, with intense pain in the head and back. On the second day I found him with violent tonic spasms, which had come on rather suddenly during the night. Both trismus and opisthotonos were complete, and somewhat exaggerated. On the third day a copious eruption of small-pox began to show itself, and in three days more, when the skin disease was fully developed, the tetanic spasms began to subside, and disappeared almost as rapidly as they had commenced. The tonic contractions continued without any intermission nearly four days. The patient passed through the regular stages of confluent small-pox without any return of the spasms, and had a good recovery.

In this unique case the tetanic spasms would seem to have been caused by the direct impression of an animal poison on the nerve centres. As soon as the central organs were relieved by the eruption of the poison on the skin, the spasms ceased, thus showing that no permanent change had been produced on the nerve centres.

Case 6.—Within the last few months I was called to see a negro woman, who was said to be *in a fit*. Being only a few steps distant, I went immediately, and found the woman in a chair in the yard, with all the voluntary muscles in a state of violent tonic contraction. At first I supposed it to be hysteria, but upon feeling no pulse at the wrist, and no sound of the heart, with my ear applied to the chest, I concluded there must be something more serious. In a few minutes the spasms relaxed entirely, the pulse returned to the wrist, the respiration became regular, and the patient was able to answer some questions. All that could be ascertained at the time was, that she had taken, what was supposed to be a dose of salts, a short time previously, and had eaten pretty freely of watermelon afterwards. Whilst in a state of relaxation, she was taken into the house and laid on a bed. After a few minutes the spasms returned with increased violence, respiration was again suspended, the pulse could not be felt at the wrist, the sounds of the heart could no longer be heard, and the patient continued in this state until death put an end to her sufferings. From first to last, the scene could not have lasted more than twenty minutes. Subsequent investigation proved that strychnine had been taken by mistake for salts. What time elapsed between the swallowing of the poison and the inception of the spasms could not be ascertained satisfactorily; so large a dose of the poison was longer in producing its specific effect than might have been reasonably anticipated. As far as I could judge, death was caused by tonic contraction of the respiratory muscles and the muscles of the heart.

It will be observed in this case, that notwithstanding the large dose of the poison, and the speedy manner in which it caused death, there was yet, during several minutes, an entire intermission in the tonic contraction of the muscles.

In the absence of any demonstrable anatomical lesions, all theories on the subject of tetanus must be, necessarily, more

or less speculative. Notwithstanding this, we are not to relax in our exertions, or to become careless in our observations. Circumstantial evidence is sometimes more conclusive than positive testimony; and, we think, that in tetanus a careful study of the symptoms will enable us to determine, in most cases, the essential from the non-essential causes of the disease with as much certainty as we can do in most other affections. The difficulty of determining between functional and organic diseases of the heart, during life, is generally recognized, and yet a careful observance of all the symptoms will generally enable us to do so with much certainty.

The terms tetanus, tetanic convulsions and tetanic spasms, are used rather indiscriminately to designate every variety of tonic contraction of the voluntary muscles. With the view of procuring more definite ideas on the subject, I suggest the propriety of dividing the disease into the *organic* or *true tetanus*, and the *functional*, *sympathetic* or *simulated tetanus*—or, if it be preferred, the term *tetanic spasm* may be applied to the latter variety.

The *organic* or true tetanus may be subdivided into the *idiopathic* and traumatic, and the latter again into the primary and secondary traumatic. The functional, or simulated tetanus, will admit of as many varieties as there are causes to produce it; thus we have toxic tetanus, hysterical tetanus, &c., &c.

Under the head *organic* tetanus I would include all those cases, whether idiopathic or primary or secondary traumatic, in which the symptoms come on very gradually, and generally develop themselves with much regularity. Soreness of the throat, difficulty of deglutition, and sense of stiffness in the muscles, nearest the nerve centres, are first observed. These increase until tonic spasms are established, which gradually extend to the muscles of the trunk, and finally to those of the extremities. Although we have occasional paroxysms of increased muscular contraction, yet they are not so violent as in the functional disease, and are never followed by entire relaxation. There is no distinct intermission. When fatal, the spasms relax only in death; when not fatal, they relax in the same gradual manner in which they commenced, only the order of relaxation is reversed, and the muscles in the vicinity of the nerve centres are the last to yield. As a whole, the organic disease is less violent in its manifestations, although much more fatal in its results than the functional. In organic tetanus the spasms persist, notwithstanding the removal of the exciting cause; whilst in functional tetanus the removal of the exciting cause at once puts an end to the disease. In functional tetanus the spasms come on and go off more rapidly than in traumatic, while they are much more violent during their continuance. If there be intermission in the exciting cause, there is a corresponding intermission in the muscular contractions. The contractions commence with the exciting cause, and relax with its cessation. These constitute the principal differences in the muscular phenomena as they present themselves in these two divisions of tetanus, and I apprehend they are sufficient to enable us to distinguish the one from the other.

Perhaps it may be impossible to distinguish accurately between primary and secondary traumatic tetanus, and yet it will be safe to assume, as a general rule, that when the symptoms occur, within the first four or five days after an accident, the disease is primary, whilst if they occur after the fifth, or more certainly after the tenth day, it may be set down as secondary.

It was not my intention to say anything on the subject of treatment, but there are one or two suggestions growing out of the views just presented, which it may not be out of place to mention.

In functional tetanus, the object of the practitioner, of course, will be, to ascertain, and remove the exciting cause. This done, the disease will be cured. In organic tetanus, whether purely idiopathic or primary traumatic, local treatment can have no effect, except as it aids in relieving the constitutional irritation. In secondary traumatic tetanus amputation, if performed immediately after the appearance of the premonitory symptoms, and before the full establishment of the tonic spasms, may have the effect, by removing both the remote and the exciting cause, of preventing the full development of the centric disease, and of assisting materially the effect of other remedies used for its removal.

The remedies upon which I should feel most disposed to rely would be, cupping over the medulla oblongata and spinal column, followed by a free use of the actual cautery at a white heat, with liberal doses of calomel and opium, and such other anodynes and anti-spasmodics as would be most likely to control the muscular contractions until the constitutional remedies could have time to produce their effect.

ART. II.—“*Local Injuries Justifying the Amputation of a Limb.*” By Prof. SKEY, St. Bartholomew's, abridged for publication by FRANK A. RAMSAY, Surgeon and Medical Director P. A. C. S.

Where is the standard of surgery by which we are guided in the amputation of limbs? In truth, there exists no standard; and the consequence is, that the limb which is preserved in one hospital or in one locality, is amputated in another. Now, this is a grievance which may be fairly urged against the surgical profession by that large community for whose benefit we profess to have ascertained and adopted the most eligible means of curing diseases and of relieving the consequences of local injuries. It is doubtless a question of difficulty, which can only obtain a solution through the medium of experience. But the means of obtaining this experience are denied to the individual, and can only be obtained in the aggregate. And hence the inconsistency of professional practice, the cause of which forms a very legitimate subject for examination and inquiry.

It would appear to arise from various causes operating upon the mind, and hence determining the conduct of the operator. The first, and perhaps the most impressive in its influence, consists in the different degree of reliance placed by different surgeons on the power and resources of Nature in the cure of

diseases. Men adopt different views of the power of the curative art. With some it holds the relation of a *vicegerent*; with others, of a *handmaid*. Our minds are not universally impressed by the conviction that Nature cures diseases, and not we; and that the province of the surgeon, beyond which he cannot step one foot, consists in removing obstacles in her path. If this wholesome fact was impressed more deeply on the professional mind, would it not instinctively lead to a closer observation, and, of necessity, to a higher appreciation of her powers. At a period as late as half a century back, amputations were at least three times more frequent than at present. Why are they now less frequent? Not because severe injuries are wanting, or that diseases have proved universally tractable, but because by the study of physiology we have become, comparatively speaking, familiar with the power which Nature wields, and by the observation of the greater resources of the body than were known to our grandfathers.

Secondly, because I do honestly believe that there exists a higher tone of feeling in the professional mind, a higher appreciation of the value of human life, and a truer sympathy with human suffering. I believe, also, that a very general observance will corroborate my own impression that, as a rule, the greater the experience of the surgeon, the fewer the operations, and, as a necessary inference, his greater reliance upon Nature. I am quite convinced that these powers have yet to be fully ascertained; and, when tested by the few, they will eventually be acknowledged by the many. This progress of medical opinion is elaborate and slow, but it is not the less sure.

Thirdly, because we have identified our opinions with what I believe to be most erroneous views, propounded by our forefathers on the subject of what were termed secondary operations. The theory of this almost universal law of surgical practice is this: That it is better for the constitution to bear one shock than two; and no reflecting man will deny it. It therefore resolves itself into the necessity of an immediate decision, "Now or never." "Now" saves life, but at the expense of a limb; "Never" risks life, and it is our first duty to preserve it. But this well-sounding theory, although it proclaims truth in the abstract, does not proclaim truth in the application. It is true to the letter, not to the spirit. The exceptions to its application are infinite; strictly speaking, it only applies in full force to cases of extreme injury, such as large contusions, crushings, or lacerations of the limb, recovery from which is beyond hope or appeal. Consequent on such destruction, the constitution must necessarily sink; and the earlier the amputation the more probable the recovery, because collapse of the vital powers is the certain issue, and reaction is impossible.

And here let me ask a question not inappropriate to the purpose. After what period of time, from that of the injury, may an operation be undertaken, which brings it within the category of the laws? At the expiration of how many hours is a primary converted into a secondary operation? By *immediate amputation*, I understand the removal of a shattered

limb, as practised on the field-of-battle, when the sufferer is removed to the rear for that purpose. But, if several hours elapse, do we still retain the term "immediate amputation." We make no distinction between an interval of one hour and a quarter of a day, on which distinction everything depends. If, then, we lose by distant absence from the case, (a very frequent condition of things,) the advantage of immediate amputation is that not an additional element in favor of the treatment which appeals to Nature, and which calls upon her to put forth her powers of restoration. Mr. Abernethy used to dwell with much force upon the curative powers of the constitution in cases of compound dislocation of the foot at the ankle-joint. He related three examples of this injury, which he treated successfully, after condemnation to the knife by other eminent surgeons. Had Mr. Abernethy's experience been greater at that period of his life, he would not have made these the only exceptions to a rule that requires far larger limitations.

It would be well for the cause, both of humanity and of science, if it were possible to draw a definite line, which should determine the confines of reparative power; but it is the very impossibility of doing so which appears in some measure to justify so wide a range in the practice of different surgeons. That there is a line, obscure to our senses though it be, will hardly be disputed by any one who has deemed the fact worthy of remark—how common is the resort to the knife in some districts compared with that of others. And the difficulty of decision is unquestionable, such is the complication of the requisite injury. Notwithstanding which, some approach may be attempted to a more general rule, founded on the nature and extent of the injury, than has hitherto guided the hospital surgeon in his decision, although the question of local injury will be subject to large modifications, founded on that of age, sex, the character and condition of constitution of the affected person.

These examples may be divided into—first, such as *require* amputation; secondly, such as *justify* amputation; and thirdly, such as neither *require* nor *justify* amputation. One word on the definition of the term *justify* amputation. To justify may be not to give the reality, but the appearance only, of justice; to obtain the sanction of the world. A man may obtain the warrant of general opinion, while he fails to possess his own. He may be safe from comment or criticism, while he is amenable to denunciation *in foro conscientiae*. By the term "justify," I mean that warrant in favor of the removal of a limb which is obtained from the consideration of an injury placed on the confines of necessity, especially if occurring in early life, in advanced age, or in impaired constitution.

Of the structures entering into the composition of a limb, one and all of which are the subject of rupture or disorganization, the first importance perhaps justly attaches to the arterial system; but as universal experience teaches us that the channel of the main artery may be suddenly obliterated without danger to the vitality of the limb, so in the rupture of the main arterial trunk, evidenced by the pulseless condition

of the limb below, the injury is, *per se*, no warrant for amputation. But if, superadded to the rupture of the main artery, the muscular system at the seat of injury is largely contused or ruptured, and the collateral channels for arterial, as well as venous blood are involved in the injury, it is more than probable that the limb will quickly fail in nourishment, the indication of which is obtained from the loss of temperature. This loss, if complete, will become apparent in the course of an hour or two. But the loss is rarely complete, and several hours, or even a day, may be required to determine the affirmative of the mischief done, or this evidence. But it is all-important evidence, and fully justifies the postponement of the decision.

Next in importance to arteries, and in close relation to them, stands the nervous system; and in reference to injury to the chief nerve or nerves, the same remark will almost apply. We do not amputate the leg because the sciatic nerve is rent asunder. The true principles of surgery would dictate a pause—a period for watching and observation. But as the rupture, whether of artery or nerve, is commonly a matter of uncertainty, we can only judge by consequences, and for these we should wait.

To justify amputation, from rupture or laceration of the muscular system of a limb, the injury must be very great, because the constitution does not sustain a shock in proportion to the extent of the injured surface, supposing the integuments to remain unbroken; but if the muscles be largely torn, and the investing integuments detached, and not susceptible of entire, or nearly entire replacement, I confess such an injury would justify a doubt as to the power of Nature to restore the parts to health. I speak of a very large laceration, with contusion of muscle, coupled with separation of integument and extravasation of blood.

I do not concur with many surgeons, who deem exposure of the cavity of a joint an important element of failure. I am quite aware that it is so generally deemed, and I recall to my recollection the early part of my own professional life, when a compound dislocation of a joint alone was deemed a warrant for the amputation of a limb. But I can bear witness to many cases of recovery as regards the limb, and a few of recovery to the joint itself.

Undue importance appears to me to be attached also to fracture into a joint, as though such fracture, in reference to the retention of a useful limb, raised a serious obstacle to recovery. That it places the joint in jeopardy I readily allow, but I do not believe that the advocate for amputation in any given case can derive from its presence an argument of great force, although I do not deny that it should always be considered an aggravation of the mischief done. The same remarks will apply to fracture of the bone, especially if comminuted, when superadded to the larger injury of a rupture of the main artery, or of the main nerve, extensive rupture of muscles, or laceration and disorganization of the integuments.

I have never yet observed much advantage to accrue to the patient from the introduction of the finger, through an opening in the skin, which is employed as an explorer, and carried

round in all directions, for the purpose of ascertaining the nature and extent of the injury done. I have never, myself, acquired much knowledge by this process, which could be rendered available to the service of the patient, nor have I known it to be obtained by others. To the patient himself, so far as he is entitled to an opinion, it has always appeared to be positively objectionable. To be sure, it gratifies curiosity, though at some expense of suffering.

Finally, in all doubtful cases, I would give the benefit of the doubt to the patient, and endeavor to restore the limb. If, consequent on a large injury to the leg or thigh, upper arm or forearm, the foot or hand lose their natural warmth, amputation is the only resource. If we find extensive laceration of muscles, with extensive separation of integument, and especially if the integument be disorganized and insusceptible of replacement, I fear we must amputate, even without waiting for the above evidence of loss of vitality in the extremity; but, in a subject moderately healthy, I do not consider that any degree of comminution of bone, or laceration of muscles, unless very extensive; any fracture in a joint, or compound dislocation of a joint, can justify the abandonment of the case, so long as the structures are capable of some general replacement, and the patient can submit without suffering to the restraint necessary to his recovery.

ART. III.—*Report of a Case of Dislocation upon the Dorsum Ilii, reduced after Twenty-five Days, by Manipulation.*
By A. M. FAUNTLEROY, Surgeon-in-Charge, General Hospital, Staunton, Va.

Ordnance Sergeant Nunn, æt. 25, admitted October 12th, 1864, with dislocation of the left femur upon the dorsum ilii:

History.—The accident occurred at Mount Jackson, September 22, 1864. This soldier was riding in an ordnance wagon, which was upset by some accident, and he was thrown upon his face; a portion of the ammunition fell upon his hip and thigh.

Signs of Dislocation.—Loss of rotundity of left buttock; left femur was slightly flexed, and rotated with adduction; the knee resting upon the patella of the right thigh and the ball of the big toe upon the dorsum of right foot. Great pain was experienced upon an attempt to extend the thigh, and considerable manual traction made without chloroform, failed to dislodge the head of the bone from its abnormal position. Manipulation was decided upon, and with the aid of chloroform, was successfully employed. The patient was placed upon the table, upon his right side, the leg of the injured side being flexed upon the thigh, and the latter flexed strongly upon the body, with slight abduction. The adhesions which the head of the bone had contracted were broken up at the first attempt, and the bone assumed a new position in the great ischiatic notch, somewhat sustaining the views of Boyer, that this latter dislocation is always consecutive in occurrence.

The head of the bone was felt in its new position, short-

ening slightly lessened, and foot not quite so much inverted. A second essay was made, the manipulation differing from that used in the first instance by the traction made upon the femur at the moment of its flexion upon the body, and its abduction, by which means the head of the bone was lifted over the edge of the acetabulum, and returned into the cotyloid cavity without snap, and the limb was extended and found to be normal in position and length.

He was retained in bed for a few days, and ordered to apply liniment ammoniac over the glutei muscles. The soldier was furloughed on the 27th of October for thirty days, still complaining of considerable soreness of the hip. This reduction was accomplished before the medical staff of the hospital. I was assisted by Surgeons R. F. Baldwin, S. B. Fisher, and Assistant Surgeons Bush and Westmoreland.

To notice in this connection some interesting points in regard to coxo-femoral dislocation, and give a cursory view of the literature of manipulation, will not, I hope, be deemed inappropriate by the readers of the "Journal."

It is a familiar fact with the profession that there are four principal dislocations of the coxo-femoral articulation. In 104 cases they occur in the following ratio of frequency: 55 upon dorsum ilii; 22 into the great ischiatic notch; 13 upon the foramen thyroideum; 8 upon the pubes. Chelius and Samuel Cooper reverse the order of the two last varieties.

Sir Astley Cooper, whose work upon luxations is most favorably known to the profession, and whose experience is of admitted value, estimates that out of 20 cases, 12 would be upon the dorsum ilii; 5 in the ischiatic notch; 1 upon the pubic bone. Gross attributes the great frequency of the dislocation upon the dorsum ilii rather to the position in which the thigh is placed at the time of accident, than to any differences of structure in the hip ligaments at particular portions of their extent.

This explanation but partially satisfies the facts in the premises. To sustain this assertion we must beg tolerance while presenting some especial features in the anatomy of the capsular ligament, familiar with all in the profession. It is thicker, anteriorly and superiorly, than elsewhere, for it is strengthened by a bundle of fibres which descend from the anterior inferior spinous process of the ilium, and by some fibres from that portion of the rectus femoris, which is attached to the superior part of the edge of acetabulum. Hence we are not surprised to find the femur but seldom dislocated in this direction. The capsular ligament is feeblest at its external and inferior aspect, and the muscles which rotate and abduct the thigh are but slightly restrained in their action by the muscles on the inner part of the femur. These anatomical features of the hip-joint, viewed in connection with the fact that the position most favorable for dislocation upon the dorsum ilii is instinctively assumed, in enlarging the polygon of gravity, in the attempt to avert a fall or lessen its violence, which is sometimes accomplished at the expense of dislocation.

Causes—Violent forcing the thigh in extreme abduction or adduction, with rotation inwards, especially, when at the same moment, the femur is driven upwards and backwards.

Pathological Anatomy.—In every instance the capsule is lacerated—posterior half especially; the round ligament is ruptured, and some of the smaller muscles either stretched or torn. Glutæus maximus medius and minimus are pushed up and folded, the head of the bone resting within the fibres of the deep muscles. Triceps adductor stretched (Hamilton). All the muscles upon the outer portion of the thigh are relaxed, excepting the pyramidalis, gemelli, obturatores and quadratus, the limb is consequently shortened, and one would expect at first blush to find the femur rotated outwards, since the muscles we have mentioned are outward rotators; but this is not the case, for the knee and the point of the foot are always turned inwards, which appears to depend upon the influence exercised by that portion of the capsular ligament which comes from the anterior inferior spinous process of the ilium. Fenner thus reports a case of autopsy in regard to one who died after dislocation upon the dorsum ilii: "Extensive ecchymosis existed; on raising the glutæus maximus and medius, the naked head of the femur was found upon the dorsum ilii—ligamentum teres hanging to it, but partially torn off. Portions of the obturator externus, pyramidalis and gemelli were ruptured. The capsule was torn through to one-half of its extent. The external muscles being cut away, the thigh could not be brought down. The iliacus internus and psoas magnus were then severed, which permitted it to descend a little, but the head could not be replaced. The triceps adductor was divided without effect. The ilio femoral ligament was found tensely stretched. All the muscles between the pelvis and the thigh were severed, and still it was impossible to reduce the dislocation. The head of the femur could not be forced back through the rent in the capsule, and it was not until the opening had been enlarged that the reduction was completed." Fenner, of New Orleans, and Moore, of Rochester, and others, attribute the difficulty of the reduction to the obstacle offered by the capsule, the opening in which ligament being too small to admit of reduction; and it is advised to move the limb in different directions, in order to increase the cleft in the ligament. The muscular system being held in abeyance by chloroform, and the reduction readily accomplished, the inference is a very fair one, that the capsule was so much torn as to offer no obstacle to reduction. This conclusion, to which we are led by inductive reasoning, is sanctioned and confirmed by the evidence gained from repeated autopsies. When, after the use of chloroform and nauseants, reduction is impracticable, the inference, from the same course of reasoning, is that the capsule is so slightly torn that the head of the bone cannot be made to return through the small rent or button-hole thus made.

Differential Diagnosis.—From intra capsular fracture the posterior dislocations are readily recognized, as in the former the limb is shortened, rotated outwards, and the foot everted. Intra capsular fracture could scarcely be confounded with either of the anterior dislocations; the position of the head of bone in latter event, the general lengthening of the limb will readily lead to a correct diagnosis.

From morbus coxarum can be readily distinguished (though

mistakes have been made) by the age of the patient and the commemorative signs.

Age of Greatest Frequency.—The *Gazette Medicale* mentions a case of dislocation upon the dorsum ilii in a child, eighteen months old. Kirby reports a case in a child three years old. Mr. Image reported to the Suffolk Branch of the Provincial Medical and Surgical Association a case of dislocation upon the dorsum ilii in a boy three and a half years old. Mr. Image reported the case "in consequence of a charge having been made against a neighboring surgeon, of pretending to reduce a dislocation of the femur on the dorsum ilii of a child four years old. It was agreed and proved by the authorities that no such case *was recorded*, and therefore had not occurred, and that seven years was the earliest period at which this accident had taken place." J. M. Sitten, of Texas, reports a case in a girl four years old, reduced by manipulation, (*New York Medical Journal*, March, 1852); Norris reports a case at eleven years, (*American Journal Medical Sciences*, February, 1839); Gibson reports a case at twelve years, (*Gibson's Surgery*, Vol. I, p. 389.) Hamilton's Analysis, under 13 years, 15 cases; between 13 and 30 years, 32 cases; between 30 and 45 years, 29 cases; between 45 and 60 years, 7 cases, the youngest being two years and one month; the average fraction less than thirty-four years. This dislocation is most frequent between the ages of 25 and 45 years. It is not likely to occur in advanced life, as the brittleness of the bones makes fractures more possible. In early life it is unusual, because the violence sufficient to produce dislocation is more apt to occasion separation of epiphyses of bone.

Period of Reduction.—Mr. Liston reduced, without assistance, a dislocation upon the dorsum ilii, two or three minutes after it occurred. This is probably an unexampled case, but proves that the earlier the reduction is attempted the less resistance is offered by the muscles. Fergusson has not witnessed a successful effort after three weeks.

Sir Astley Cooper has described instances after four or five weeks. Breschet mentions reduction after seventy-eight days; and in the *Memoires de l'Academie Royale de Chirurgie de Paris*, Vol. V, p. 529, is related a dislocation of the hip, reduced after two years. Authors generally agree that reduction may be attempted within three months, but that the dangers and difficulties of reduction, after such a lapse of time, should be plainly stated to patient.

Treatment by Manipulation and Extension.—Hippocrates says: "In some the thigh is reduced with no preparation, with slight extension directed by the hands, and with slight movement; and in some the reduction is effected by bending the limb at the time of making rotation." Richard Wiseman wrote of reduction by manipulation in 1676, (*Hamilton*); Richard Boulton called attention to this subject in 1713, (*Boulton's Practical Surgery*).

Thomas Anderson, of Scotland, reported a case thus treated by himself in 1772, (*Anderson's Medical Commentaries*); Daniel Turner reports a case in 1742, (*Turner's Art of Surgery*); Pontean draws attention to this subject in 1783, (*Vi-*

dal); Dr. Philip Syng Physick, of Philadelphia, reduced a case by manipulation in January, 1811, before his class; Dr. Nathan Smith, Professor of Surgery in New Haven Medical College, taught, in 1815, that this was the only proper way of reducing this dislocation, (*Dorsey's Surgery*); Dr. Nathan R. Smith, (his son), Professor of Surgery in Baltimore Medical College, has always taught similarly. Similar directions are given by Palleta in 1818. Dr. Take Home, of Boston, reports a case in 1820; Kluge, in 1825, reduced a case of this kind by manipulation with extension; Wathman, in 1826, gives instructions for reducing this dislocation by manipulation; Rust recommends this in 1826; Colombat gives similar advice in 1830; Collins suggests this mode in 1833; Desprez in 1835; Fischer, Mahr and Clarke, in 1840. In 1851, Dr. W. W. Reid, of Rochester, New York, published a report of cases, the first in 1844, thus treated by himself. Many practitioners in more recent times have reported cases of reduction by manipulation. The profession are indebted to Dr. W. W. Reid for his clear elucidation of the principle upon which manipulation is founded, proving by collateral evidence that the chief impediments to reduction were not owing to muscular contraction, but *indirect* action of the muscles that are in a state of tension by the abnormal position of the bone. He has thus thrown a clearer light upon an hitherto obscure point, and placed manipulation upon the high vantage ground of action, justified by a careful and rigid study of the elements observed in this lesion. The question may here be pertinently asked, why has not manipulation received that general adoption which its advocates claim it so eminently merits? The reflections of Hamilton upon this point appear to the writer so excellent as to be readily admitted as highly plausible, if not received as a just exposition. "That some conclusion ought to be drawn from the circumstances, that since the time of Hippocrates to the present day, manipulation has been occasionally recommended, and successful examples reported. The reduction being accomplished in most instances by processes identical, or nearly so with those now adopted, yet generally the writers appear to have been ignorant of what has been done before, and, indeed, they have generally avowed their belief that the method suggested by themselves was new and original. Possibly the slowness to establish, and total inability to sustain and perpetuate a reputation, was not the fault of the method, and had nothing to do with its failures." Extension is a time-honored mode of reduction, and claims for its support names sufficient to create a dynasty of opinion: Sir A. Cooper, S. Cooper, Boyer, Vidal, B. Cooper, Fergusson, Miller, Pirrie, Erichsen, Petit, Duverney, Dorsey, Gibson, Mott and Van Buren.

Hippocrates has expressed his preference of mode in the following words, after recommending the suspension of the man by the injured limb from a gallows, describes it as "a good, proper and natural mode of reduction, and one which has something of display in it if any one takes delight in such ostentatious modes of procedure."

The Relative Advantages of Manipulation and Extension.—In manipulation there is less compression of the muscles.

The leverage power of the femur is its greatest advantage, if properly and judiciously applied.

The means are always available, and does not tire and exhaust the muscles, but places the bone in a position when the normal action of the muscles will easily restore the bone to its proper position. Inflammation, suppuration and caries are more likely to follow the reduction by extension, because the amount of violence produced is, *pari passu*, with the greater leverage, obtained by applying the force to the leg, through the mechanical advantages of pulleys. In manipulation the head of the bone is liable to assume different positions, and thereby rupture the various soft tissues. The avowed purpose of extension is to exhaust muscular contractility, and in so doing, are we not more likely to do violence to the muscular, vascular and nervous tissues of the joint? Any one who has witnessed the application of Dr. Jarvis' apparatus, or the pulleys and its adjuncts, by Mr. L'Estrange, must admit that these means are more potent for injury to surrounding tissues; and if we receive the views of Dr. W. W. Reid, extension, *per se* is unnecessary and illogical.

Snap of Reduction.—Heard, when the muscles have not been paralyzed by chloroform, or tired by long-sustained tension. The case herein reported was reduced without any snap of muscular contraction. Was it the result of the large amount of chloroform administered, or the result of muscular exhaustion, from the long and fruitless contraction of the triceps adductor? In this case the soldier was very muscular in habit, and we may venture to say, without much fear of contradiction, that the degree of snap is generally *pro rata* with the extent of anaesthesia produced. A very interesting and decisive experiment in this regard was performed by M. Case, of Strasburg. He states that a limb can be exempted from anaesthesia, or its extent controlled during inhalation, by merely compressing the main artery that supplies the limb. (*Annuaire de Therap*, 1850). Again, the answer may be offered, that under chloroform the uterus maintains its expulsive efforts, and why should the reflex action in the muscles of a limb be annulled for the time? The reflex action of the uterus is held in abeyance, whilst its expulsive efforts are continued under the direction of the ganglionic system of nerves.

Thanks are eminently due Surgeon E. S. Gaillard for many facts presented in this paper.

ART. IV.—*Conservative Treatment of Compound Comminuted Fracture of the Femur, with Cases.* By G. M. B. MAUGHS, Surgeon P. A. C. S.

Case 1.—C. S. Sheffield, private 15th Mississippi cavalry, aged 17, of feeble constitution, power of reaction very low, was wounded at Tishimingo Creek, June 10th, 1864, transported some thirty or forty miles in an ambulance to railroad, and thence in cars some 120 miles, to Lauderdale Hospital, where he was admitted June 15th, 1864; compound comminuted fracture of femur at junction of middle and upper

third—comminution very severe. Treated by Smith's anterior splint; but little effort at reparation; suppuration excessive. Died August 1st, 1864, of hectic and exhaustion.

Case 2.—M. B. James, private, company "H," 1st Kentucky cavalry, aged 19, wounded at Tishimingo Creek June 10th, transportation as case 1st, admitted in hospital June 19th, 1864; compound comminuted fracture of femur at upper third, the ball in its oblique course passed through the bone as high up as the trochanter major. Treated by position; attempted union by free provisional callus; doing well until the middle of August, when he was attacked with continued fever, of which he died September 9th, 1864.

Case 3.—W. H. Ray, private, Newsom's cavalry, company "H," aged 24, wounded at Tishimingo Creek June 10th, 1864, admitted into hospital June 19th, 1864; compound comminuted fracture of femur at middle third. Treated by Smith's anterior splint; cure perfect; no shortening or deformity.

Case 4.—E. H. Powell, private, Newsom's cavalry, company "H," aged 49, wounded at Tishimingo Creek June 10th, 1864, admitted June 19th, 1864; compound comminuted fracture of femur at middle third. Treated by Smith's anterior splint; recovered with three inches shortening.

Case 5.—W. B. Davis, private 6th Mississippi cavalry, company "F," wounded at Harrisburg July 14th, admitted at Lauderdale Hospital July 18th; compound comminuted fracture of femur at middle third. Treated by Smith's anterior splint; union perfect; shortened one inch; no deformity otherwise.

Case 6.—D. C. Crouch, private, 20th Tennessee, company "H," aged 19, wounded at Harrisburg July 14th, 1864, admitted July 18th, 1864; compound comminuted fracture of femur at middle third; extensive comminution. Treated by Smith's anterior splint; furloughed October 12th, 1864; perfect union; shortened three inches.

Case 7.—J. Posten, private, 1st Kentucky cavalry, company "C," aged 18, wounded at Harrisburg July 14th, 1864, admitted July 18th, 1864; ball passed through both thighs; compound comminuted fracture of left femur at upper third at trochanter. Treated by Smith's anterior splint; furloughed September 26th; cure perfect; shortening scarcely perceptible.

Case 8.—J. H. Shelley, private, 3d Kentucky cavalry, company "L," aged 20, wounded near Tishimingo Creek June 9th, 1864, admitted June 14th; compound comminuted fracture of femur at the junction of middle and upper third. Treated by position. The cure in this case has been greatly retarded, and the limb rendered useless by the meddlesome surgery to which he was subjected, in incising the soft parts and removing the broken fragments of the femur. Union complete; will recover with great shortening.

Case 9.—J. W. Martin, private, 7th Kentucky cavalry, company "K," aged 19, wounded at Tishimingo Creek June 10th, admitted June 14; compound comminuted fracture of femur at the junction of middle and upper third; extensive injury to soft parts; died June 16th, 1864.

Case 10.—J. L. Lawrence, private, 8th Kentucky, company "C," aged 25, wounded at Tishimingo Creek June 10th, 1864, admitted June 14th; compound comminuted fracture of femur at upper third; died June 16th, 1864.

Case 11.—N. L. McNight, private, 14th Confederate cavalry, wounded at Harrisburg July 15th, 1864; compound comminuted fracture of femur at upper third. Treated by long, straight splints; died September 9th, 1864.

Case 12.—N. L. McGoodwin, sergeant-major 3d Kentucky cavalry; compound comminuted fracture of femur at junction of middle and upper third; extensive comminution. Treated by position; union complete; shortened two and a half inches; wounded at Harrisburg July 14th, 1864; furloughed September 16, 1864.

Case 13.—J. T. Tindell, 18th Mississippi cavalry, company "K," aged 19, wounded July 15, 1864; compound comminuted fracture of femur at upper third, the ball passing up to the joint; extensive comminution, with great injury to soft parts; died September 18, 1864.

Case 14.—A. Latten, Morgan's command, wounded at Harrisburg July 15th, 1864; compound comminuted fracture of femur at upper third, near hip joint; injury to bone and soft parts very severe; wound sloughed extensively.—Treated by long splint; died of pyæmia Sept. 1st, 1864.

Case 15.—J. Malone, Morgan's command, aged 21, wounded at Harrisburg July 15, 1864; compound comminuted fracture of femur at middle third. Treated by long splint; partial union of bone; wound doing well, when he was taken with pyæmia, and died September 17th, 1864.

Case 16.—V. T. Bynum, 3d Kentucky cavalry, aged 23, wounded at Harrisburg July 15th, 1864; compound comminuted fracture of femur at lower third. Treated by position; union complete; shortening two inches; gone home.

Case 17.—J. H. Stevens, 3d Kentucky cavalry, company "D," aged 20, wounded at Harrisburg, July 14th, 1864; compound comminuted fracture of femur, upper-third; treated by position; had pthisis pulmonalis; died August 3d, 1864.

Case 18.—H. Jenkins, private, company "H," Mississippi Partizan Rangers, wounded at Harrisburg, July 14th, 1864, aged 23; compound comminuted fracture of femur, middle-third; treated by position; cure perfect; shortening scarcely perceptible.

Case 19.—W. T. Ivy, private, 19th Mississippi cavalry, aged 40, wounded at Harrisburg, July 14th, 1864; compound comminuted fracture of femur, upper-third; ligation of arteria profunda; treated by position; union complete; shortened one inch.

Case 20.—W. W. Shopshire, 38th Mississippi, company "D," aged 28, wounded at Harrisburg, July 14th, 1864; compound comminuted fracture of femur, junction of middle and upper-third; very great comminution; attacked with erysipelas; recovered; union complete; shortening one inch; furloughed August 12th, 1864.

Case 21.—Yankee Lieutenant, wounded at Harrisburg, July 14th, 1864; compound comminuted fracture of femur, upper

third; during treatment femoral artery sloughed and was ligated complete recovery; has been exchanged.

Case 22.—A. Bay, attached to the army, was admitted for wound of femur, middle-third, compound comminuted; treated by position; union complete; but little deformity; gone home.

Here we have twenty-two cases of compound comminuted fracture of the femur, treated without amputation; not selected to make an argument, but consecutive cases, and include, with a single exception, all the cases so wounded and so treated at these hospitals, during the time included within this report. And we have not extended the report through a greater time, or hunted up isolated cases because others might have been wounded at the same time, of whom no record was preserved, thereby rendering the statistics incomplete and worthless.

To the statistician, these twenty-two cases are worth more than a thousand would be, gathered up from different sections, where in each section a few cases had been omitted, and the result in others was not known. Such statistics are like native offerings in heathen temples, they tell but a partial story.

The excepted case is that of a private, wounded at Harrisburg by a grapeshot through both thighs near the hip-joint, with great destruction of the soft parts, tearing out the testicles, and bruising the perineum. It was not expected that this unfortunate man could survive even a few days. His testicles were removed, the wounds dressed, and his mangled limbs placed in the most comfortable position; stimulants and nourishing diet were administered. He lived for six weeks, during which time one of the wounds healed up, the bone united, and considerable progress had been made in the other limb, when he sank, worn out with the extensive suppuration.

This case is mentioned and fairly stated to show that it could not have been included with those given in this report, as the object of this paper is not to prove that wounds of the thigh may not be of such a nature as to require amputation. Would, however, the most reckless advocate of the knife have used it in this case?

Our object is to prove that in all compound comminuted fractures of the femur, with the artery intact and no very great destruction of soft parts, conservative surgery not only gives the patient the advantages of a natural over an artificial limb, but also gives him a better chance for his life than amputation would. And all of this we think this paper establishes.

Of these twenty-two cases nearly all were subjected to circumstances most unfavorable to recovery. The patients from the Tishimingo battle, treated by Assistant-Surgeon S. Kennedy, were hauled over rough roads for thirty or forty miles, and then transported some hundred and thirty miles by railroad, being constantly disturbed and their wounds fretted for eight or nine days before their arrival at Lauderdale hospital. Several of the patients from the battle of Harrisburg were subjected to nearly the same transportation and frequent change of place; the delay, however, in their arrival at the hospital was not so great; some of the others were necessarily

removed three or four times during their treatment. The surgeon in charge, Dr. Hoyle, thinks the death of more than one of these clearly attributable to this untoward circumstance. Cases 9 and 10 died soon after their admission, never having reacted from the shock. Case 17 had phthisis pulmonalis, of which he most probably died; admitting, however, that he did not really die of this, it can not be denied that it rendered his recovery from any serious injury most improbable. Case 2 was progressing favorably when attacked with continued fever, at the time prevailing in the hospital, of which he died. While, therefore, there would be much justification for excluding cases 2, 9, 10 and 17 from the report, as their deaths were only indirectly the result of their wounds, yet we will give the advocates of amputation the benefit of them.

We have then recovered, cases 3, 4, 5, 6, 7, 8, 12, 16, 18, 19, 20, 21, 22—total, 13, or 59 $\frac{1}{11}$ per cent. Died, cases 1, 2, 9, 10, 11, 13, 14, 15, 17—total, 9, or 40 $\frac{10}{11}$ per centum.

Now, let us see what would have been the result had amputation been performed in all those cases. In cases 2, 7, 13, amputation must have been at hip-joint; disarticulation, all of whom would have died. That a case does now and then survive this formidable operation does not affect the rule that of ten or twenty so operated upon all will die. Dr. Macleod never saw a successful case in military surgery. We have heard of but one—that of a private wounded by a shell at Fort Pemberton, and operated upon by Surgeon W. M. Compton, and afterwards attended by Surgeon Green in hospital at Yazoo city.

In cases 1, 8, 9, 10, 11, 12, 13, 14, 17, 19, 20, 21—total, 12—amputation must have been high up in upper third, through or near the trochanters; of these, nine, most probably ten, would have died. In the other seven cases, amputation could not have been lower than the middle third; of these, four would have died, giving for operative surgery, deaths 16 or 72 $\frac{8}{11}$ per cent., recoveries 6 or 27 $\frac{3}{11}$ per cent., or more than 100 per cent. in favor of conservative, under the most untoward circumstances, over operative surgery, under circumstances the most favorable.

And this proportion, we doubt not, but for the meddlesome interference of the surgeons, would hold good throughout the Confederacy, or even be greatly increased, as it would scarcely happen that a concatenation of circumstances so unpromising would again be met with. It will be observed that in all of these cases, with a single exception, and that greatly to the detriment of the patient, the treatment was eminently conservative. No EXCISIONS of the *femur*, no INCISIONS of *soft parts for the removal of loose pieces of bone*, no formidable display of machinery to keep the limb in place and the patient from sleep.

The wounds were carefully examined, and all foreign bodies, including spiculae of bone immediately in the track of the ball, removed. The limb was placed in Smith's anterior splint, or simply a straight splint, or what was preferred, placed in position and retained there by soft cushions or pillows, and all unnecessary probing or handling carefully voided.

By even late authorities, the experience of the Crimean campaign and Dr. Macleod's observations have been quoted to prove that ordinary fractures from rifle balls, above the knee, (of the femur,) demand amputation. These give only eight per cent. recoveries for conservative surgery under the most favorable circumstances, with selected cases, and only thirty-two per cent. for amputation. This is indeed an alarming fatality, and as frightfully dangerous, as it shows amputations of the thigh to be two to one against recovery, as it is four times more successful than conservative treatment, would of course establish the rule, to amputate. But against such a rule our paper is an unanswerable demurrer; and as it reverses the *result*, and proves that by saving the limb we save twice as many lives as could be saved by amputation, by the same parity of reasoning it must also reverse the *rule*, and establish this. *As a general rule, ordinary fractures above the knee, from rifle balls, should never cause primary amputation.*

ART. V.—On the Treatment of Camp Itch. By Assistant-Surgeon S. R. CHAMBERS.

Having lately read several theses upon a disease peculiar in the army, known as "Camp Itch," and believing it to be the duty of every medical officer to make known his experience in the treatment of the disease, especially as there is such a difference of opinion among the profession as to the proper treatment, I do not presume to offer my treatment as a "specific," but certify that it has *never failed* in my hands to accomplish a cure, or also in the hands of several of my "confreres," to whom I have given it, for trial. It is composed of the following articles, viz:

The inner bark of the elder,	1 pound.
Water,	2 $\frac{1}{2}$ pts.

Boil the bark down to one quarter of a pint, then add:

Lard,	1 pound.
Sweet Gum,	4 ounces.

Evaporate the water, and at the same time skim whatever filth may rise to the top of the vessel, after which set it aside to cool. When thoroughly cool, add:

Basilicon Ointment,	2 ounces.
Olive Oil,	3 ounces.
Sulphur Flour,	$\frac{1}{2}$ ounce.

The mode of applying this ointment is as follows: First, make the patient wash well with soap and water, dry the parts affected, rub the ointment on the parts affected with the hand until it is absorbed. Repeat this twice a day, omitting the last, which is only done previous to the first application.

I also recommend that the patient, in the worst form of the disease, wear the same under-clothing one week, as the clothes necessarily will absorb the ointment, thereby saving the patient and the trouble of applying it more frequently. In ordinary cases this treatment will cure in one week; the more severe cases will take longer. Were it necessary, I could furnish the reports of over one hundred cases that I have treated in this way, and in every case with perfect success.

C. S. Medical & Surgical Journal.

RICHMOND, JANUARY, 1865.

E. W. AYRES.....PUBLISHER AND PROPRIETOR.

EDITORIAL AND MISCELLANEOUS.

A year of storm and tempest, of war and alarms has swiftly passed away, and, in offering the usual compliments to our readers, we may be pardoned a few reflections not foreign to the occasion.

We may be allowed to congratulate ourselves that the Journal, founded under so many adverse circumstances and surrounded with so much to impede its early progress, has survived the year, which has just departed. Under the pressure and exigencies of the times, the scarcity of material and the want of labor, every literary and scientific periodical of the South has been suspended, and most of them have ceased to exist. Our little bark, alone, has safely weathered the gale, and commences its voyage anew, in good heart for the future.

The circulation of the Journal has surpassed any reasonable expectation, for such times as these surely do not favor the growth and cultivation of scientific studies, and we therefore may note with some pride that our readers are more numerous than ever honored a similar publication in our country, and, we have reason to think, that but for the want of proper post-office facilities, the subscription list would receive many accessions.

It is also a subject of remark, that in spite of the rigorous blockade, the unceasing efforts of our enemies to deprive us of all intercourse with foreign countries, the Journal has never failed to have access to the most recent foreign periodicals which, while they have lacked in variety, at least enable us to offer to the reader an epitome of all the valuable material being collected in more peaceful countries, where nothing disturbs the daily progress in scientific research and observation.

And to the critics, who may undervalue our modest labors, and who, indeed, have but little trouble in pointing out many shortcomings; who smile at the sometimes wild propositions of our enthusiastic correspondents, or sneer at the dry statistics of hospital records—to these we would say, and with truth, that we confidently look to them in the coming year to relieve the Journal from such well founded censures. With so much food for study, such opportunities for observation, so great a field for practice, it would be indeed a reproach to our profession if it failed to make the original department of their only medical periodical rich with useful matter. The invitation to co-operate with the editor of this Journal is again earnestly extended to the physicians of the South, who alone can place our work on the elevated ground that its friends desire so much to see it assume. If the Journal fails, its conductors have determined that the fault shall be laid to the

door of the Southern profession, who refuse to bestir themselves in spite of every inducement; to shew themselves true lovers of their calling, both able and willing to overcome all obstacles, and, in the midst of tumult, with quiet minds to ponder over the vast fields of knowledge which surround them. Whatever fate betide us, let us be faithful to the last to our noble art, and come what may, the satisfaction of duties faithfully performed, obligations fairly met, and responsibilities honestly borne, will be ours.

Foreign Honors to an Army Surgeon.

The recent inauguration of the statue to Baron Larrey in the town of Tarbes is suggestive of considerations which, in the present condition of our Army Medical Department, may be deserving of expression. The ceremony was accompanied by all the display peculiar to France. The place of Larrey's nativity now boasts of the distinction, and presents to posterity a monument to the memory of one, great amongst great men, who, in the service of science and the pursuit of his noble profession, by the independent exercise of those rare abilities with which Providence had endowed him, raised himself to a position as it was deserved. To trace the history of Larrey, and to follow him step by step through the dangers he braved throughout his distinguished career, would be to detail the wars of the First empire. It is enough to say that by his singular devotedness to surgical science, by the combination of rare gifts of genius and discretion, of daring and reserve, Larrey became the idol of the French army and the companion and friend of the Emperor, whose last expression respecting him constitutes his proudest epitaph. This is not the only monument to his memory. A statue in bronze, by David d'Angers, the famous sculptor of those of Ambrose Pare and Bichat, cast from cannon taken in the different great battles in which the renowned surgeon distinguished himself, was risen to his memory in Paris by subscription; and Marshal Soult, Duke of Dalmatia, then Minister of War, decided upon its being erected in the *cour d'honneur*, the grand square of the Hopital du Val de Grace. Larrey is represented in his uniform, pressing to his heart the will of Napoleon, on which is inscribed the words "C'est le plus vertueux et le plus honnête homme que j'aie connue." These are but the perishable evidences of his greatness, and the least durable of its records. The student of military surgery must set before him as an example worthy of imitation, Baron Larrey, Surgeon-in-Chief of the great French army, and Baron of the Empire—one who created for himself a monument which must last for all time. To his genius are due many of those practices now received and adopted as indicating the true principles which should guide the military surgeon in active service. The "ambulances volantes," first introduced by him when acting as surgeon-major to the hospitals of the army of the Rhine, have since done good service on the battle-field, and are now universally employed. His writings on military surgery must ever be regarded as text-books on the particular subjects of which they treat. His bold vindication of the independence of his profession, and his manly advocacy of the immunities which sickness and the casualties of war entail, are matters of history. These constitute his paramount claims to distinction. It is difficult to determine where he was most distinguished: whether at Aboukir, where for his coolness and courage in operating upon many under fire he was presented by Napoleon with a sword having the words "Larrey" and "Aboukir" engraved upon it; or fifteen years later, when at Bautzen he

vindicated the wounded from the grave imputation of self-mutilation and braved the Emperor's wrath, not without convincing his judgment, again to receive a noble recompense for the independent discharge of the high duties with which he was entrusted. We might follow Larrey through the campaigns of Germany, Prussia, Poland, and Spain, where he filled the office of Surgeon-in-Chief to the Imperial Guard, until, on the field of Wagram, he was raised to the distinction of Baron of France. Few of our readers are unacquainted with these details, we therefore forbear to enter upon them.

"What a splendid career!" one exclaims: "and what a noble country which admitted of his being so honored! No English surgeon could have achieved a similar position." True: but remember the occasions and the man. How many Larreys could our military service boast? Admit that in personal courage we could find his equal; that for zealous devotion to the duties of their profession numerous examples are to be met with amongst those whom the Horse-Guards no longer care to honor; and that in the practical knowledge of their profession, as well as in the manual dexterity essential for its successful exercise, our army surgeons could supply many equally entitled to confidence. It is in the combination of such qualities and their active employment that Larrey founded his permanent reputation. Have our army surgeons of the present day taken such steps to "do likewise" as might reasonably have been expected of them? Grant that the position of the English army surgeon is one which now especially attracts much attention. Admit that the authorities, by a series of contemptible quibblings, have disgusted many with a position in itself highly honorable, but rendered intolerable through their narrow-minded vacillation as to the status of the medical officer, and their apparent inability to determine if he should occupy the position of a gentleman equally with those whose business it is to kill rather than to cure. Admit all this, and deplore it. We yet ask, does the English military surgeon, as a rule, fulfil the highest expectations which his responsibilities and opportunities warrant? How many record their experience? How many suggestions on military hygiene have the profession or the service been favored with from those whose life ought to be devoted to such pursuits? What results have followed from the extraordinary experience of modern warfare? Are our encampments regulated by sounder views of that which is essential for health? Is the treatment of the wounded provided for with more complete regard to the necessities of their position? Are the ravages of epidemics anticipated and prevented through more effective arrangements and discipline? Is the control of the Army Medical Department distinguished for those many improvements in detail which the light of modern science has revealed? Or does recent experience prove that there is yet room for progress? These are questions we commend to the careful reflection of those to whom great opportunities present themselves. High positions involve commensurate responsibilities; and what position is more important than that of the military surgeon? We have often deplored the silence on matters professional which characterizes the Army Medical Department, including as it does many of the most exalted genius and largest experience. Larrey found time to place on record the achievements of the one, guided by the observation of the other. We commend his example to all, and bid them do likewise.

To Ascertain the Purity of Chloroform.—If a small piece of sodium is thrown into pure chloroform, no action whatever ensues; if, on the contrary, any impurity, such as alcohol, be present, then a disengagement of gas takes place.

London Punch on Army Surgeons. From an Army Swell.

Pray don't imagine, *Punch*, that the Surgeon-Famine in the army is the fault of the swells. I suppose I am what is called a swell. My ancestors came in with CANUTE. They have never exercised any branch of industry, and have always lived sumptuously on the labor of others. I myself am in the army, simply because I think I ought to be something more than a swell, and am fit for nothing else so much as for a soldier.

Now, of all the fellows in a regiment, I assure you, I consider the surgeon to be, generally, the most of a gentleman. He is at least as much of one as any of them, and he has, if regularly appointed, been made as much more of a gentleman than the rest as a much better education than they have had could make him. The indignity which army surgeons are treated with proceeds not from pride of rank and birth on the part of any of their brother officers, but from a consciousness of the want of those advantages on the part of some of them. In this commercial country many a fellow enters the army who never had a grandfather that he could give any account of, and the best such a fellow can say of his pedigree usually is that his father was a tailor. More commonly an officer of that class of fellows is the son of a large mercantile rogue, or a swindling railway jobber. Well, he cannot help that; and he is rich, and his own money at least was not ill-gotten; and he might be a gentleman if he chose. But instead of that, he is too often a purse-proud snob. This is the sort of fellow that thinks it necessary to assert his position by insisting on the abasement of army surgeons. It is not the swells in a regiment, *Punch*, who are insolent to the surgeon, but only the snobs. Mushrooms these snobs are called by men who have less respect for a mushroom than I have, for I consider it an excellent ingredient, not an objectionable one, in a mess. Those who term them mushrooms, will further say that, inasmuch as they peculiarly abound in the cavalry, the majority of them are horse mushrooms; but, comparing these bloated and extremely offensive snobs to fungi, I would rather name them toadstools.

I consider the surgeon quite as much a combatant officer as myself. We don't in these days, charge with lances in rest, and we no longer brandish battle-axes and maces. He is as likely to be struck down at any time by disease, sometimes by shot, as I am. I wish no invidious distinction to be made between him and myself. I would not assign him the uniform of a beadle. Let him wear that of his relative rank in the army, or be allowed to dress in plain clothes, so that he might, as perhaps he would like to, be distinguished from a combatant fool.

Unless the reasonable demands of the army surgeons are granted, I shall be obliged to throw up my commission. Suppose I am killed in action, well and good. I am prepared for that. But I may be wounded. For that I am prepared too. I am always ready to lose a limb for my country. But my country must take care that it shall be skilfully amputated. I expect my country to provide that any operation which its service may require me to undergo shall be performed safely, quickly, and pleasantly, as much as it can be. Certainly I value my blood too highly to allow it to be spilt by a bungling operator. I don't at all relish the idea of an acting-assistant surgeon, obtained by advertisement, attempting to extract a bullet deeply lodged in the complicated anatomy of your humble servant,

ARMIGER.

Rag and Famish, Sept. 1864.

Hippophagy Again.—One of the secretaries of the French Society for the Protection of Animals, in a lecture given the other day in Paris at the Garden of Acclimation, revived the proposal to constitute horseflesh an article of food, demonstrating its acceptability with a tureen of horse soup, and another dish of that noble animal dressed *a la daube*, which he offered to his audience, and they, including many ladies, devoured. Well; who shall tax them with eating strange food? If all the prime tongues ready cooked, on sale at our British grocers could speak, and would tell the truth, we apprehend that not a few of them would neigh.

There is support, doubtless, in saddle of horse, but, for eating, we are disposed to prefer saddle of mutton.—*Punch*.

CHRONICLE OF MEDICAL SCIENCE.

Address in Surgery. Delivered at the Annual Meeting of the British Medical Association. By J. PAGET, F. R. S.

Mr. President and Gentlemen:—I have chosen as the subject of my address, "The Treatment of Patients after Surgical Operations," and I venture to think that I shall best discharge my duty if I deal with this subject, not merely in retrospect, as if there were some great achievements over which we might rejoice, but rather with the view of indicating some of the things which yet remain to be done, and which may be done if the members of this great Association will make it their chief business to do them. There is, indeed, nothing in the retrospect from which we need avert our faces; rather, there are many things over which we might boast as good work achieved; and if I had to name them all, or illustrate the chief of them by one, I would take the security and soundness of our practice, founded on a wider recognition of the principle that the recovery from an operation, as from any other injury, is so natural a process, that, except in certain exceptional cases, it should not be at any time or in any way interfered with; for we are so constructed that injuries by violence, from whatever source, do of themselves, and naturally, bring about the processes for their own amendment. We are fitted, not only for the calm of life, but for the storm of it; not only for the things which are certain, but for those which are probable; nay, almost for all that are possible as events that occur in our life; and among these probable events are injuries by violence. Among these, and not widely different from them, except in regard to some of the conditions in which patients come before us, are the injuries inflicted by surgical operations.

Nevertheless, whatever be our faith in the natural process of recovery from injuries, there are certain things left for us to do or to watch, or in some respects to guide. And first of all we have to decide in every case the method by which the surgical injury shall be healed. We have long been settled in a just preference for the most speedy mode of union, that is, for union by the first intention, whether there be healing by immediate union or by the union by adhesion. And there are many obvious reasons for this; but the most potent of them, to my mind, is, that so long as a wound is unhealed, there is some risk, however small, that the patient may fall into pyæmia or erysipelas, or some other of the sore plagues of surgery. But the manner of healing the wound being decided, there yet remain many things to be done, even by those who have the most full faith in the natural processes of recovery. They may, however, perhaps be summed up in comparatively very few words—namely, repose and cleanliness. But both of these leave much still to be done. For repose there must be

not only perfect quietude of the wounded part and the parts of the wound itself, but of all the circumstances that surround the patient; and for cleanliness the most complete purity of the air, the water, and everything that may come near the wound.

And repose requires much more than this. It requires the absolute non-interference, except on express occasions, of the surgeon himself. There must be no rough contacts, no searchings, no pressure, no touchings of the wound except with the softest things, and in the softest ways, such as soft streams of water. More than this will spoil many a good day of nature's work. And for cleanliness, there must be not only those things which are commonly provided, but much more—things on a larger scale—baths, either general or local baths, the frequent changings of dressings, if there are to be any dressings at all, and the frequent changes, not only of bed linen, but of beds, and even in hospitals, the frequent changes of wards, or places in wards, or, in private houses, frequent changes of the rooms that the patient must at each time occupy; and in all these things the surgeon has to set before himself to be done, a great many things that do not lie commonly enumerated amongst the general rules for surgery. And simple as the rules may seem, they include yet many things, but I can speak of them only in general terms. Nevertheless, the very generality of the terms may imply a largeness of the rule that may be laid down, that for all the ordinary management of patients after operations, repose and cleanliness are the only two things that need to be observed, and this not only for the local management of the wound, but even for those things which accompany it, namely, the shock and the re-action, that are either associated with or follow after other more important operations; for deaths from mere shock are certainly very rare, and the results of re-action are, I believe, never fatal, even when it runs up into the condition of acute traumatic fever. The discomfort of a sharp re-action after a shock is perhaps too apt to make us look upon it as a kind of disease; and yet, if we would judge it more truly, it is really only an example of the higher and more peculiar power of organic bodies. In inorganic matter the axiom is that action and re-action are opposite and equal. In organic bodies it is not so: the re-action is always, in health, stronger than the action.

The heart, for example, if it be depressed in its action, suppose by the shock of a sudden shower of water, recovers, not the condition which it had before, but something beyond it. The spring recoils with the same force as that which depressed it; the pendulum swings equal distances this way and that; but the heart with vital force recovers to something more than the force which depressed it. So a muscle which is gradually wasted by exercise recovers, not only from the waste, but to something more of power, and becomes hypertrophied. In a similar manner, after a shock, all the parts which have been depressed in their vital functions, suspended, or brought to their lowest mark, recover not merely to the normal standard in which they worked before, but to something beyond that standard; they re-act with more force than they had even before they were depressed. I repeat, therefore, that however much the phenomena of re-action, even in sharpest form, may simulate disease, they must be regarded and dealt with as those which are the most manifest indications of perfect and strong health; hypertrophies, as we call them—diseases that indicate only the perfection of the vital power in that, being depressed, it does not recover like an inorganic spring or pendulum, but rises to something more than the force which is exercised at some previous time. In this way, however much we may regard the forces of the natural process of recovery, and that they leave us really with comparatively very little to do in the ordinary progress of

our surgical cases, yet there is enough left for us to be done in the cases that pass beyond these; for in regard even to the management of the general phenomena, questions continually arise as to what must be done to meet this or that condition. I think the distinction may be drawn safely according to the question of whether they be events that are natural to the body, and not avertable, or such as come to the body from without, or are bred in it by error from within, and which need, therefore, our most careful search. For with regard to the questions of general management, the single fact of cleanliness, if we take it in its largest sense, will shut out nearly all the mischiefs that come from without; but that cleanliness must be cleanliness of person, of air, of water, and of everything that comes near. And so with diet: On this there may be more question, at least there has been more question; and I venture to think that if all are not agreed, yet all will be soon completely agreed, for the pendulum of general opinion which swung to the other extreme some thirty years ago, and very nearly swung to the opposite extreme some three or four years ago, is now setting back to the more just medium of moderation. I remember that one of the first cases I ever took, some thirty years ago, was that of a man who had the greater part of the lower jaw removed for a fibrous tumour. It was long before the days of chloroform. The cutting part of the operation occupied upwards of an hour; the patient remained on the table more than an hour and a half, and he left at the close of the operation greatly exhausted; and though he was a young and very healthy man, for the three days following the operation he received three table-spoonfuls of milk per diem, and about a pint of milk-and-water was on each day injected into the rectum. The rest of the diet for the remainder of the case was after the same scale. He recovered with remarkable quickness, and without one hindrance to his good progress; and I remember that the operator, in a clinical lecture upon the subject, said he ascribed so remarkable a recovery to the great abstinence that was used. The diet in such cases, he said, could not be too low. At the present time, perhaps, in some places, certainly in many places not long ago, the same patient would have been plied with wine, brandy, and with all manner of food; and I have little doubt that he would have recovered as well, as speedily, and as perfectly, for I have seen the same oppositions of practice carried out without mischief in the last few years.

But then, what is the reason of this apparently equal success of two opposite methods of treatment? Certainly not that they are adapted to different times or different types of disease; for I repeat that I have within my own experience the last few years seen or practised them, both without damage; but that between the two there runs the natural process of recovery, which is, in health, in all persons not already tainted with great disease, so certain, that neither excess nor deficiency of diet, nor surfeit nor starvation, can always avert it. Let me not seem to be indifferent as to how a patient should be fed after surgical operation. I cite these apparently equal successes of different modes of treatment, not for the praise of either. I have no doubt that either of them, always adopted, would sometimes do great mischief; but taken together, and with the evidence afforded by cases that are left alone, they are very strong tests and very strong proofs of the sufficiency of the natural process of recovery; that if they be left only with such rules of prudence, of personal cleanliness, of sufficient, even of liberal, mixed diet, it is, for all the ordinary cases that will come within our charge, amply sufficient not only for the repair of the wound, but for the recovery from those general injuries which patients sustain by operation.

I think, therefore, we may boast—it may be we have to regret

that the boast could not come sooner—we have to boast that we can now treat our patients, after operations, in a natural and reasonable way, in full reliance on that which is one of the first principles of our construction—that we are made to bear, not only the stress of all the ordinary events of life, but the stress of injuries; prepared, as I said before, not only for the calm, but for the storms of life. And herein I think that surgery has made a considerable contribution to that study of the natural history of disease which is becoming one of the most pressing wants of our time. What will happen if this and that disease be left to itself, or only just so managed as the comfort of the patient, or his obvious needs may suggest? The question has been asked very often, but it is very rarely answered; and yet it must be answered before we can judge rightly of the value of any medical or surgical treatment. Till we have made our standards of what the progress of disease is if left alone, we cannot judge of our own power in controlling, or amending, or remedying it. Surgery has done this in regard to injuries. And let it not be thought that, by thus reducing the practice of surgery, in ordinary cases of operations, to the mere watching and guarding of the mischiefs that may happen, we thereby diminish the value of the profession, or degrade it. The obstetrician has not done so by giving up the meddlesome midwifery of former ages, and, certainly, that branch of our profession was never more honored nor more useful than it is now, when it confines itself in all ordinary cases to the watching of the perfect ways of nature.

So let the surgeon stand by and watch; let him be content if he can keep out mischief—always a very difficult task. Let him be well content if he can do that which is more difficult—control the restlessness of popular or half-informed ignorance, which would be perpetually, either in its audacity or its fright, endeavoring to amend the perfect ways of nature. Or if he be ambitious of more than this, he need not wait long, for easy as our course may seem when all runs smooth, we soon find that the whole grasp of our knowledge and the whole strain of our mental power is not more than enough to meet the difficulties of the case, when anything runs counter to the common course of nature.—Now let me speak of some of these, and chiefly with the view of indicating what may be the chief subjects and the chief course of our future study of them. I mean, namely, those cases which do not proceed thus smoothly and quietly according to the common course of things, in which every patient submitted to an operation, should recover, as our common expression is, without one bad symptom. And here I must say generally, that it seems to me that what we chiefly need is a more minute and exact record of all our cases—of cases, namely, not only when the operation ends in death, but of those in which it brings in any mischief—even some of the smallest.

There has been excellent work, and most laborious done, in tabulating the cases of the mortalities after operations, and it has been done so well that it seems ungracious to say that it is time now we should be doing something more or something better. And yet it is certain that we do want to know how, not merely the total mortalities of any considerable operation, but in each hospital, in each private practice, in each place, and after each mode of treatment, not only the whole amount of mortality, but the particular causes which have led to it; nor only so—the particular causes, if we can ascertain them, which have led to hindrance in the ordinary process of recovery. Now, first there are certain cases which confuse our records in that they ought never to be mixed up with the results of operations as being, in any sense, due to them—namely, cases of hernia, tracheotomy and trephining; for

of all these we may say the operation itself does not cause death; the only fault to be ascribed to it is, that it does not always save life.

But we have no right to reckon these as cases due to operations. Every surgeon who has performed these operations has had to regret a very large mortality from them; but mortality has not been because of anything that he has done, but because solely of the insufficiency of his means. For myself, among all the cases of this description that I have operated upon, I am not sure that I have ever lost a patient directly and truly as a consequence of the operation; yet nearly half of those upon whom I have operated for hernia have died, and more than half of those for tracheotomy, and nearly all after trephining. But all those were cases after the operation, not in consequence of it. They were vain, yet quite justifiable, attempts to save lives that, but for the operation, were only yet more certainly lost than they were lost afterwards. These cases, therefore, should not be allowed to swell our tables of mortality. They may be studied most carefully, but they must be studied as special cases where the history of the disease cannot altogether be separated from the history of the operation. And there is yet another class of cases; those, namely, in which patients, after operations, die of diseases that, as it were, fall casually upon them; the deaths, for example, from typhus or typhoid fever, from scarlet fever, from scurvy, and the rest; these should not properly, or without explanation, swell our tables of mortality. Only in dealing with these we need to be very honest.

Sir Astley Cooper used to tell that in going over the wards of a foreign hospital with one of its most distinguished surgeons, the surgeon told him that in his practice amputation at the shoulder-joint, which he had often performed, had never proved fatal. In the course of the same morning, Sir Astley Cooper found in the dead-house the body of a man whose arm had recently been amputated by that surgeon, at the shoulder-joint, with the wound unhealed, and he asked the reason of it. The answer was, "He did not die of amputation, he died of pneumonia," that is, as we should say now, he died of pyæmia, one of the symptoms of which was the pneumonia, which never would have happened to him but for the operation by which his arm was removed. We need, therefore, be very honest in these cases, the more honest because there is so great a temptation to be the reverse, and the fraud is so easy, to assign a death to that which looks as if it were the consequence of something falling by accident upon the patient, although that accident, but for the operation, would never have befallen him. But, setting aside these cases, let us look at those which do really belong to the history of the operation, which it is our chief business to avert; and first of all respecting deaths from shock.—My impression is that they are extremely rare. I can scarcely remember to have seen one that could be fairly assigned only to the shock of an operation, and my supposition is, that these become much more rare now than they were in former times, partly by the influence of anæsthetics, and partly also by the more liberal and more natural way in which we treat our patients before the operation, so that they can come to face the difficulty, not with the least, but with the most strength we can give them.

Nevertheless, such cases do happen, and it would be well if we could so analyse as to be able to assign in each case which particular constituent of a shock was the cause of death; for example, the loss of blood, the great impression of alarm and terror on the mind, the influence of an anæsthetic, the great violence done and impressed, whether consciously or not, on the nervous centres, and from them reflected not form upon the heart alone, but upon every organ of organic life—how does each of these contribute to

the general total of a shock? Cases could be adduced where each of them alone has been fatal; but when all concur, as they do in almost every surgical operation, it may be very difficult, and may seem almost impossible, to assign to each its proper share in the general result of great danger or deaths from shock. Yet it is very necessary to study them as if we could decide which has contributed most largely, or which has been alone sufficient, for clearly we have to deal, not with shock as a total result of an operation, but with each shock standing alone. According to its source, so must be the measure of its treatment. My impression is, that in recent times, it has become too customary to regard the loss of blood as the greatest mischief done in producing the shock, and to consider too little the impression upon the nervous system, which being not consciously perceived, through the influence of anæsthetics, is apt to be overlooked.

I would indeed spare blood with all caution; but not so much from the fear of any immediate consequences, as because a large loss of blood seems to make a patient more liable to erysipelas and pyæmia, and the other subsequent mischiefs of an operation, and certainly makes him less capable of recovery from them if they do befall him. But it is still my belief that that which we have most to study in regard to the phenomena of shock, are the results produced by great violence done on the nervous system, of which I observe that they are less considered in the present day, only because we are not aware of them, through not being aware of the amount of suffering endured by the patient under the influence of an anæsthetic. I know no case in which the courage to do little is more necessary than in watching the patient after the shock of an operation; for great energy in treatment may certainly do great mischief. It is quite enough, from whatever source the shock may come, if we can maintain life for a time at a very low level, and if we can do this by the smallest sufficient quantity of stimulants, especially, in these cases, of brandy; for if we can do this, then time and the natural process of events work quietly for the recovery of the patient; and we may be nearly sure that if he can be so maintained, the re-action will, of itself, and almost necessarily, ensue; and we may believe this, notwithstanding a temporary deepening of the influence of shock, for, I think, if others will watch it, as I have done, sitting by and noticing the case almost minute by minute, they will find—and it may be of some interest, even in a physiological inquiry—that the recovery from shock is not a direct and continuous ascent from the deepest depression to the most complete re-action, but rather a vibrating and undulating one.

The patient is now better, and then again, without interference, becomes of himself worse; and as we watch it thus it is rather like the rising of waves in a flood-tide—each one is a little higher than the one that preceded it, until at last there comes the full sweep, and re-action is fully accomplished. And sure I am that a great deal too much interference takes place with shock by those who do thus even minutely watch it, in the fear that the least depression is perilous, and must lead to a yet lower and lower depression still. I have said, too, that the deaths from re-action are probably even less numerous than those from shock. I doubt if I have ever yet seen one of them; and I doubt very much whether genuine re-action, even if it runs up into an acute traumatic fever, needs to be in any way interfered with, or is at all prone to lead into fevers of worse or more perilous type. The larger risks are in those in which re-action is not complete. There are some patients, it will be found, who never rise into a re-action—never rise, that is, after an operation, to anything more than the natural level of health. Now, I am not prepared to say that this

is dangerous. I always watch them with great and scrupulous care: for there is, as every surgeon knows, a certain condition in which it may be said that the patient is too well after an operation. He has not recovered even to that discomfort which consists in full re-action.

But many of these will pass by, and may perhaps, for aught I know, illustrate the most perfect method of recovery, where only health is regained. But certainly there is peril when in some patients the re-action is too faltering, faltering more than it should, not only undulating, but each of its waves falling a little more than it rises. Again, there is great peril in re-action that is too long delayed, for certainly the more re-action is delayed the more likely it is to slope into a greater mischief; and certainly these are not cases to be left alone; in all these re-action need be accelerated by stimulants, and brought more nearly to the time at which it should of itself and spontaneously recover. And more perilous still are the re-actions that are attended with hurry and confusion, with disorder, and restlessness, and delirium or convulsions, or with great expenditure of any kind of force—all these are perilous; they are cases of what has been described as action without power. They are difficult to explain physiologically; and yet I suspect most of them would be found to occur in those who have, if I may so speak, a natural instability of constitution; for in all these, as soon as the natural balance and stability of life are disturbed, there seems to ensue a rapid waste of structure, and with that a rapid and purposeless production of force.

For all these there seems to be one great remedy, namely, opium, which acts, I suppose, not merely as an anodyne, but by the singular power which it possesses of hindering waste, and thereby preventing the production of purposeless force, which is certainly the consequence of accelerated waste. Now, the re-actions that I have spoken of have been general. As the shock falls directly or by reflection upon every part of the body, not on the heart alone, observe, but upon every part of the organic life; so, commonly, is the re-action general, and every part has its due of just work in it. But chiefly and especially the force, both of shock and re-action, falls upon the part which is the very seat of injury, the very seat of the operation. Or if great violence be inflicted, there may be for a time total suspension of all nutritive processes, and the part may die; primary gangrene may ensue, or escaping this, after the suspense there may come a much more than normal re-action, a much more than normal exercise of organic force, an acute inflammation; nevertheless, this acute inflammation is never, so far as I have seen in any of the external parts, the consequence of more than local mischief.

We see, for example, after an amputation, or an operation on the face, that great and active inflammation ensues, but it does no other than a local harm. It may spoil the healing of a wound; it may give rise to a recurrent hemorrhage; it may produce too great suppuration; it may even produce a primary local gangrene; but with this it stops, and never, so far as I have seen, leads to death, or to any more than a local calamity. But sometimes, when the operation has been performed upon parts of great extent or of great importance to life, this local re-action, which may be observed completely independent of the general one, may be fatal. Thus, for example, patients die rapidly sometimes after ovariectomy, of a suddenly fast-setting-in peritonitis; and this, although the phenomena of a general re-action may not have been clearly established; and it is to be observed that they die as patients die, with peritonitis after perforation, or as they die sometimes, with rupture of the intestines; they die as if with shock, with a sudden setting-in of extensive and acute disease. Deaths

of this kind are growing more rare still than they used to be, for I think we know better now how to treat them. Deaths of the same kind used to occur more often than they do now from lithotomy; patients died then within one or two or three days after the operation, from some sweeping inflammation of the peritoneum or pelvic cellular tissue; and I think they died more commonly then than they do now, when they were treated with bleeding or with other antiphlogistic treatment; for the things to be met are not merely the phenomena of acute inflammation, but the shock which the setting-in of such inflammation produces, or, if I may so speak, re-produces. Before they have recovered from one there comes in another shock, and that shock proves fatal. The treatment for them should be, not by bleeding, but stimulants. Although these cases may have about them even the signs of an acute peritonitis, stimulants and opium must be given until the shock is completely gone by. Now, these cases of which I have spoken—and I might mention some more, especially those of primary and recurrent hemorrhage, as sources of danger or of death—these all might, in the more accurate and minute records to which I wish to move the Society, form a group as it were by themselves, for they all are the results of mischiefs which are, so to speak, the more or less of natural things—of things which we cannot altogether avert; and with these I would class one which comes sometimes in one group and sometimes in another, namely, the use of chloroform. I could not find terms strong enough to speak of the value of anæsthetics for surgical operations; and let me say, not only for their mercy's sake, not only for the saving of pain, but for the abundant good that follows afterwards—the loss of that impression with which patients awake every morning from a disturbed night's sleep, the loss of the reflection and memory of the operation, the great diminution of all that shock that was dependent upon absolute pain, whether the pain were reflected from the nervous system or not.

All these things are so great blessings that one seems to be ashamed to detract in the least measure from the influence of anæsthetics, and yet I must mention one. I have said that great energy of treatment may be a great mischief in the treatment of a shock after an operation. I mean that it is so if after the profuse giving of stimulants or of food of any kind sickness be produced; for among all things which can complicate the depression of a shock vomiting seems to be the worst, and unquestionably this will sometimes follow the influence of anæsthetics, and when it does follow, I know nothing except time by which it can be averted. I know it can be prevented commonly by giving the patient the most light and digestible food, some two or three hours after the administration of the anæsthetic, and by great care over the digestive organs. But notwithstanding these, it will sometimes happen, and it complicates with great severity the occurrences of a shock; for when it begins, so far as I know, medicine has no control whatever over what we call chloroform sickness. I know nothing that will stop it.

It will stop in time; after a few hours in some; after a few days in others. It is of no mischief to all the cases of minor shock; but for all the larger ones it is, unquestionably, a great addition to the peril, and I cannot doubt that it has sometimes been a fatal one. It deserves, therefore, the most careful study of all the members of the Association, and of all that can contribute to its remedy. But when I say this, let me say also that this is the only mischief that I know of it. There are never wanting those who will ascribe to anæsthetics certain deaths which ensue after operations in which the shock inflicted has been comparatively small. Patients have submitted to minor operations, and in

a few hours they have been in great peril, and in a day they have died; and it seems to be forgotten entirely that cases of this kind not only occurred, but were, as I believe, much more frequent, before the introduction of anaesthetics. There is an admirable work, which is familiar, I am sure, to all the older members of the Association—Mr. Travers on "Constitutional Irritation;" and there they will find abundant instances of this—where patients, after comparatively the most trivial operations, have died, as we must believe, under the influences of shock; the only singularity of their cases was that the cause was apparently so trivial: but if those cases be referred to, it will be evident that the influence of anaesthetics is excellent in preventing deaths such as these by diminishing what in all probability was the chief cause of shock here—namely, the great mental alarm, pain, and dread of the consequences of the operation.

Now let me pass to another set of cases, which come in larger number, as the results of operation, and which are different from all that I have spoken of hitherto, in that they are not strictly to be called inevitable; they are not, in any sense, the more or less of the necessary consequences of the operation; rather, they come from those things which, it seems to us, if we can be bold enough to cast our eyes forward, it is not only our plain duty, but within our ability to avert—those, namely, I mean, which partake more of the characters of diseases, and which we may believe are severally due to specific morbid alterations in the blood, whether due to mischiefs coming to the patients from without, or to those that are bred within him by the natural results of the operation. It seems to me very important that we should be quite clear in recognising all these cases of erysipelas, of pyæmia, of phlebitis, or nearly all of them, of secondary gangrene, of tetanus, and the rest, as really, and from their beginning, constitutional; as general that is, before they are local; for if we might do so, then we might study them by the light of those which are the very types of these diseases, these acute morbid affections of the blood, namely, eruptive fevers, and study them by the light not only of their pathology, but by that which we have already learned to do in their management or their treatment. It is quite true that erysipelas or phlebitis is most apt to appear at the seat of the operation, and to look, therefore, like a disease of purely local origin, but the same will happen with the truest eruptive fevers.

Some few years ago I cut a boy for the stone; three days afterwards he seemed in great peril of his life, with general disturbance of his system; the day after there appeared a brilliant red eruption at the wound. That was measles—earliest, most intense, at the seat of injury, and thence it spread over the whole body, and passed by without doing damage. I have known the same thing to occur with scarlet fever after an injury at the knee-joint. Dr. William Budd has recorded a similar case of small-pox, after a bruise upon the nates. So that really this local occurrence of erysipelas or other diseases at the seat of operation, is no more proof of their true local origin than in these cases. Measles was not proved to have a local origin because it occurred first and most intensely at the wound of lithotomy. And there is another character, one which seems to me very important in relation to the diagnosis between these diseases that are of true traumatic origin, and purely local, and those which, although they occur at the seat of injury, are yet truly specific, and of blood origin—namely, the difference of time at which the local inflammation will, in the several cases, set in.

A true local and traumatic inflammation comes in either before or very little after the time of general re-action; so that, within one or two days, usually, we find it at the wound, or it may be later—three or four, or in some cases, even five days, when the general re-action has been long delayed. The later it is, the worse. On the same side, that which is a specific blood-disease, comes in after the re-action, and commonly even with considerable interval

of time between the two. Thus, for example, we may find not unfrequently after an operation on the face, where these phenomena are best shown, or after an amputation, the next day, or two days later, the parts around the wound may be swollen, oedematous, painful and ruddy, the seats of active inflammation. But this is not erysipelas, nor a disease of any great moment, nor one that will tend to more than local troubles. I have never seen a case of that kind which required any active treatment. But after it is passed, if it has ever occurred, and it may be even many days later, there may set in another inflammation, looking—it may be very like it—with similar swelling, redness, tension and pain, but the later inflammation is sure to be one of erysipelas or pyæmic origin, or in some other form specific. So, too, with phlebitis. On the day after the amputation the femoral vein, for example, may be sharply inflamed, tender and painful, and with some constitutional disturbance; but this is never a disease of great moment; it passes by without treatment. But in that respect it is very different from the phlebitis which may ensue a number of days later, and which is quite surely pyæmic, or connected with some grave affection of the blood. I know, therefore, in these respects, nothing more important than studying the very time at which these inflammations set in. If they be early and only traumatic, they pass by without damage; if they be late, whatever the result, they must be regarded minutely as cases of general pyæmic or erysipelatous origin, indicating something wrong about the patient or within him—something to be amended.

There is yet another character—namely, that inflammations, of however acute a kind, which are traumatic, are very seldom preceded by any appropriate constitutional disturbance. It is remarkable that it should not be, but we never see them thus preceded. On the other side, those that are of general or blood-origin, very rarely ensue without rigors, or some profound affection of the nervous system. In speaking of rigors, if I may diverge so far, I wish I could provoke some one to the more minute study of them, to see what their true physiology is. What is the meaning of that strange shuddering which we see as the precursor of some of the most formidable diseases that we have to deal with? so strange as it is, too, in its relation to the urinary organs, so often the precursor of great mischiefs; so strange in its relation to an accumulation of pus that cannot be discharged. I fear that we are as yet almost wholly ignorant of its physiology; but I would suggest—and let it be my contribution to the study I should like to invite some one to—that we are too much in the habit of thinking that its most important indication is in the sensation of cold which most patients endure with it. Yet this is really only a sensation, and, moreover, only a subjective one; for it is certain that, even before the rigor ensues, the temperature of the surface of the body is increasing, and that it continues to increase during the whole course of the rigor. I would suggest that they should be studied rather in relation to convulsive diseases, and my reason is, that they, not only in a thorough rigor, have all the essential characters of convulsion, but may also, as surgery sometimes unhappily shows, be replaced by convulsions.

Three years ago I operated on a gentleman for stone. Two or three days after the operation he had a terrible rigor, and that was followed by great heat, producing sweatings, and then by extensive suppuration over the surface of the chest. A few days later, another rigor ensued, with similar phenomena subsequent to it, and with other characters of pyæmia, and with a second great suppuration. Some days later than that, he had a severe epileptic seizure, and that was followed in the same way with a profuse suppuration again, in another part of the walls of his chest, and then with various signs of phlebitis, he gradually recovered.

Not long ago a woman was under my care in St. Bartholomew's Hospital, with relapsing erysipelas. All the previous attacks of

erysipelas were preceded with definite rigors. A rigor regularly told of the coming relapse of erysipelas, but the last attack was preceded by severe convulsions, and they were followed by three days' coma, and the coma was not relieved until the erysipelas appeared. For the rest of her life she had no further cerebral symptoms, and after her death we found no indication of disease in the brain. She had died only exhausted.

This case has been told me. A member of our profession had chronic pyæmia; in all the earlier part of his illness each suppuration characteristic of it was preceded by a rigor; in the latter part tetanic convulsions preceded each suppuration. I could mention, I think, other instances in which convulsions do thus replace and substitute the ordinary phenomena of a rigor. I imagine, indeed, that those that are familiar to many members of the Association, convulsions that precede eruptive fevers in children, are of the same kind. But this must suffice for the suggestion I have made, and I am diverging too far from the subject that I began with, which was, namely, to indicate by those precursory constitutional symptoms the necessity of distinguishing clearly between those inflammations that are truly local and those that are pyæmic, or of erysipelatous origin, and by that to tell what seems to be a greater need, that we should study all these diseases by the light of the true eruptive fevers; I mean, namely, all cases of erysipelas, of pyæmia, of secondary gangrene, of secondary phlebitis, and even, I would add, of tetanus, and all others that we have to class together as the great source of our mortalities after operation.

But the mere enumeration of these cases must be sufficient to tell that I cannot speak of them all now; only let me take the liberty of mentioning one or two things that have been most upon my mind, as most worthy to be told those that have a large and widely-extended practice, and who might, with their contributions, bring in such a mass of evidence upon the point as has never yet been accumulated. First of all, in regard to the causes of these things. We know very well that among the general external causes for all these mischiefs, there are the crowding of patients into too limited a space, that is, into spaces where they have too limited a supply of air, uncleanness—in a word, if I might sum it up quickly—dirt of all kinds, within or without; and for internal conditions, we know very well that those patients are most prone to them who are, as we may believe, most unstable in their composition—namely, those whose tissues are disordered, either by defective food, or by intemperance, or by excess of animal food, or those who retain in their frames too large a quantity of refuse—matter not sufficiently excreted—as the gouty, and above all, those that suffer with granular degeneration of the kidneys. We know well enough that in any one of these the ordinary consequences of a surgical operation are sufficient to bring in that morbid condition of the blood which manifests itself in erysipelas, pyæmia, gangrene, or some other source of fatality. But my impression is, that there are yet some other causes to be sought for; for where even we may believe that all these are absent, yet these plagues come in. For example, I do not know that we can assign any one of these diseases to be a product solely of hospital practice. I must say for myself, that I have never seen one of them more intense or more fatal than I had seen it in single cases amongst the best and most well-ordered houses of the metropolis; certainly not one that I could mention which has been worse in St. Bartholomew's Hospital, than I have seen it in a house, in a room, and under a charge with which I could find no distinct fault. It may be said that in hospitals we can never altogether exclude the sources of foulness and infection. I am not prepared to say, I am not prepared to doubt, whether they may not exist also even in our best houses; whether our sanitary arrangements anywhere are so perfect as to shut out the sources of even the worst form of zymotic disease.

I can only suspect that there are yet some things hidden. I

cannot yet profess myself prepared to believe that there is no one of us living in such conditions of external health, but that after an operation there is that lying at his bedside which will breed some dire calamity to him. But I would suggest here—not only to hospital practitioners, upon whom, most unjustly, as it seems to me, the whole burden of proof of these cases has been hitherto cast, but to those who practise also in private—that in every case where any one of these diseases occur, I would most conscientiously try, and that we should look for its source to the hospital or the private house, or the practice should be brought to a strict trial—a private trial, if you will—but a just and a true trial before our conscience; and if the hospital or the house, or the practice be found faulty, let it be condemned, and be at once amended. Another point I would suggest is, that it is not enough for us to study these things only in their worst forms, in those in which they are deadly, for we can never know the true extent of a mischief if we know none but these whom it kills. If a patient barely escapes with his life, or even in the process after an operation he passes through any peril, even of the least, he may indicate as great a necessity for amendment of the conditions in which he has been placed, as if he had died. This is true of erysipelas; and there is a thing to be considered, that, seeing how vast are the differences between the worst and best cases, it may be quite within our power to reduce the whole of the cases that do occur to the condition of the lowest peril.

But much more, it seems to me, is this the case with pyæmia, or rather with the group of diseases which we have to include under the most inappropriate of all terms, a term not only insufficient, but altogether false; for the one thing there is not in pyæmia is pus in the blood. Look only at the number of cases that are included in this disease, and the number which altogether elude not our observation, but our record. There are, first, cases of acute pyæmia, well marked by rigors, by profuse sweatings, by rapid exhaustion, by articular suppurations, by pneumonia, deposits of pus here or there, and rapidly fatal. These are the cases that swell up our records of mortality; but there are others which ought to be recorded and studied with equal care, namely, the chronic, where the same series of phenomena ensue, occupying only a longer time for their occurrence; and again, there are yet others as truly pyæmic, those which are seldom recorded at all, namely, those in which there are but threatenings of these conditions. Patients that have repeated rigors, slight pains about the joints, and abscesses at some distant interval of time, pass through their course with that which looks scarcely like peril, and yet it may be the very same disease which, overlooked in the hospital, may cause the deaths of all patients that next come under operation; and again, there are yet others, cases that after an operation pass on with one abscess after another. All are familiar with these, but they are not reckoned commonly as pyæmic. The whole history of their occurrence, and the most accurate comparison of them with others of the same acute type, shows their identity; and there are yet others, where patients, after operation, are attacked with inflammation, first in one vein and then in another, then with induration of the subcutaneous cellular tissue, then with a small deposit of pus that is soon discharged and healed up. These again are cases that we need minute record of, that in all hospital practice should be recorded, in regard to the grave question whether these might be avoided, for I venture to say, if we can avoid these more local manifestations of the poison, so surely we can avoid the more principal ones.

I have said that one advantage of studying these cases by the light which we have from those that are the express and typical examples of blood disease of the acute form, is that you have to treat them after the same method as we now deal with the eruptive fevers. I know, indeed, that with regard to these our medical

power can scarcely be spoken of as in any strict sense curative—we manage them.

I wish surgeons could manage pyæmia as well as physicians and general practitioners can manage scarlet fever or eruptive fevers that they have to deal with; but still even they do manage more than cure them. And yet let me suggest that there is great hope that we may discover absolute specifics for these things, when we see that some cases or some symptoms may be cured with apparently a true specific power; for example, the recovery of certain patients from erysipelas under the influence of large doses of iron, so definite; (?) that one must surely speak of it as a true specific for the disease in those cases. No one, I think, has been more disappointed than myself in the endeavor to make iron useful in all cases; but no one can be more convinced that there are certain cases in which iron is a distinct and certain cure for erysipelas. Quinine has, in some cases, a power of the same kind. It cures, as Dr. Latham says, outright, and in the strictest sense. And having occasion to mention that honored name, let me congratulate the members of the Association on the rich treasury of knowledge which he lately contributed to the profession—knowledge which shows him so old in experience, so fresh in intellect, so strong, as he has always been, both in the power of thinking and in the art of telling what he thinks.

And there is another remedy of this kind. Quinine, in large doses, will cure the rigors of an acute pyæmia (?) almost as certainly and as swiftly as it will cure ague; and curing these by what seems to be a distinct and specific power, it will sometimes help materially to the final recovery. But I cannot profess that I have seen it do more than thus help; and if we look back to the records of the many trials and many disappointments I have endured, I think there is but one thing I have ever seen have fair remedial power over pyæmia: that is, a profusion of fresh air. The most remarkable recoveries from pyæmia—they are three—that I have seen, were those in which the patients may be said to have lain day and night in the wind. They lay with the wind blowing all round about them through the room. They so lay, that I have said that I wished they could hang our patients in beds outside of the hospital, rather than within the walls. But it is time I should have done; and though out of the abundance of my ignorance I could go on for a length of time, telling of things that I think require our most careful study, let me only end by impressing on you some of the great motives that we have to make this the chief subject of our study: I mean the means by which we may reduce the mortality after our surgical operations.

I need not dwell upon our selfish interest in the matter; I need not speak of the disappointments and deep regrets that we should save ourselves, if we could only, by some measure, reduce the mortalities of these things; but rather, see that the whole course of surgery of late years has been such as to render the performance of surgical operations more and more feasible, if only we could greatly reduce their mortality. They can be done without pain. The after treatment may be now conducted with so little pain, that I should count it as a matter of mismanagement if, in any ordinary cases, a patient complained at all after the first or second day.

The rules for operation are every year improving; the education of students in them is every year advancing; constantly our mechanical appliances are improving, and drawing more near to perfection; and witnessing the cases of ovariectomy and re-sections of joints and others, we may safely say every year adds to the number of those things that should be done to save life. Yet over all this, which might be so bright, there hangs a cloud—as it were, a dark pall.

We cannot do these things without risk, and often without too great risk to life. Our risks in amputation are counted by the mortalities of from fifteen to fifty per cent.; after amputations of the breast from five to ten per cent.; after lithotomy in the adult,

twenty, forty, or fifty per cent.; and even after minor operations the mortality ranges in one's practice, I suspect, to two, or three, or sometimes even more than that per cent.; and it is because of these things that we are driven sometimes to painful substitutes—to caustics, to the ecraseur, and lithotritry; and we learn from abroad of tolerated barbarisms, of practices which might lead us to think that the whole art of dexterous surgery was lost. We learn of limbs amputated and eyes extracted by caustics—of limbs wrenched off, after crushing of bones and crushing through their flesh; and this is justified in the minds of the surgeons—for they are surgeons by whom these things are done—on the plea that a cutting operation is of so great risk that there is no substitute too bad for it.

To amend this is the task that we have before us; and with what heart may we go to the work? Why, surely, with very good heart, if we see what is done in some places, and under the best care, and contrast the results of the best circumstances with those of the worst. Let me cite only three cases. A very distinguished member of our Association, Mr. Hussey, records from Radcliffe Infirmary, Oxford, that the true mortality after amputation is only thirteen per cent., and the mortality in the Parisian hospitals is upwards of fifty per cent.; and he states that of fifty cases of amputation performed in that same infirmary, below the knee, there was but one death. Mr. James records from the Exeter Hospital that the total mortality of all amputations is only fourteen per cent., and amputations after disease have a mortality of less than nine per cent. So Dr. Humphrey again records from a hospital in Cambridge, that the total mortality of amputations, of the lower extremities, observe, is only sixteen per cent.—a mortality which rises in the Parisian hospitals, which are far from being the worst in Europe, to upwards of sixty per cent.

These are the things which have been achieved, and these are the things which it is the express duty of every hospital and private surgeon to see that he achieves in his own practice; for we should go to the study of these things with the consciousness that a great part of the deaths that still remain are not inevitable; that by more care and scrupulous attention, not perhaps in our own practice on the very patient himself, but in all that surrounds him, these mortalities might be reduced. Even in Paris, within the last twenty years, the mortalities from great operations have been reduced by at least ten per cent.

Now as much, and much more than that, must be done in England; and so much, and much more than that, will be done, if the members of the Association will say that it shall be done, and will act vigorously on the decision.

Clinical Lecture on a Case of Diabetes. Delivered at St. Mary's Hospital, by THOMAS K. CHAMBERS, M. D., Lecturer on Clinical and Systematic Medicine at, and Physician to the Hospital.

William S—, aged twenty-two, a thin, young-looking, farm-laborer, has suffered for at least two years with ailments of various kinds, which are commonly considered by pathologists to be symptomatic of diabetes. He has been weak and unable to work, felt always thirsty and usually hungry, and passed a large quantity of urine. For the last year he has been unable to work at all.

He was admitted into St. Mary's, May 31st. At this time the symptoms I have named were noticed. The chest was examined and found healthy, the pulse was slow and regular, and the bowels opened daily. The skin was normally moist, and he stated that at night he often perspired. His sleep was sound, except when he was roused by his bladder getting full of urine. His weight was 95½ pounds. He remained in the hospital five weeks, during which

period the following variations in the urinary symptoms, with the changes in weight during the corresponding time, and the alterations in treatment to which I trace these changes, are noted in a table condensed from the case-book:

During the *first* week the total quantity of urine passed was 680 fluid ounces.

Of the specific gravity before fermentation, 1,012.

" " " after " 1,012.

His weight had increased to 96 pounds.

During the *second* week the total quantity of urine passed was 449 fluid ounces.

Of the specific gravity before fermentation 1,039 to 1,040.

His weight had decreased to 95½ pounds.

During the *third* week the total quantity of urine passed was 472 fluid ounces.

Of the specific gravity before fermentation, 1,039 to 1,041.

His weight had increased to 97 pounds.

During the *fourth* week the total quantity of urine passed was 452 fluid ounces.

Of the specific gravity before fermentation, 1,040 to 1,042.

His weight had increased to 97½ pounds.

During the *fifth* week he lost half a pound in weight, and then left the hospital by his own desire.

During the *first* week he was treated with a grain of opium every night, a mutton chop for breakfast, in addition to "full diet," with three captain's biscuits, in place of bread, daily.

During the *second* week the opium was left off, and the treatment altered to eight grains of iodide of potassium, three times a day, with a drachm of cod-liver oil; he was allowed but one captain's biscuit, instead of bread, daily, but as much meat as he could eat, and as much milk as he could drink.

During the *third* week the captain's biscuit was changed to bran biscuit; but in point of fact he did not eat that substance, preferring to go without breadstuffs altogether. No other change was made.

During the *fourth* week no change was ordered in the treatment.

In the *fifth* week an attempt was made to get him to eat Van Abbott's gluten bread toasted and buttered, but in vain.

The first practical point to observe in the pathology of diabetes mellitus is the arrest in the function of constructive growth. That generally used material of nutrition, sugar, which ought to be assimilated as food, and made available to the growth of the body, passes in and out again of the thoroughfare of the circulation unaltered, and is ejected in the urine. And here I refer, not only to the sugar, which is taken as such into the mouth, but also to that which is formed out of starch, by the action of the saliva. So that in a thorough diabetic, the whole of the saccharine and amylaceous matters in the dietary are utterly wasted. Trying to feed him upon them would be just the same as feeding him upon nothing at all. More than this—I think it would be doing him harm.—These useless articles of food, though they contribute nothing to his support, stop his appetite, and so he does not eat the needful quantity of really nourishing things; and, moreover, the analogy of other diseases would lead to the conclusion that the burdening a disabled function with work to which it is unequal, will disable it more and more. If the stomach rejects undigested an ounce of beef, it is made worse by the administration of a steak. If the eye-sight fails or the brain reels on slight exertion, common experience prevents us from demanding violent efforts.

Therefore, you find that cutting off a patient's sugar, bread and potatoes by no means lowers him. On the contrary, he often gets heavier under the restriction. And one can easily believe the instances recorded by Dr. Pavy, where treacle, honey and sugar, intentionally administered as an experiment to diabetics, made the patients feel worse, and lose weight. I do not mention in evidence, or assign any importance to the increase or diminution of sugar in

the excretions under the influence of saccharine or non-saccharine diet. It is less when little starch and sugar is taken; it is more when much is taken. But the real point is the acquirement of flesh; and the test, the addition of weight. You will find, when the ordinary mixed diet is used by diabetics, that much flesh is lost; and that it is regained when a carnivorous dietary is rigidly enforced upon them. With the flesh also comes strength, showing that muscle is gained, and not mere fat.

The great point, then, in the treatment of diabetes is to accustom the patient gradually to live entirely on meat, or, at least, entirely on albuminous and glutinous food. This need not seem a mighty hardship: the iron-framed Esquimaux do it, and the wiry, tough, half-breeds of the Pampas, with a bill of fare certainly less varied in flesh-meat than our European meadows afford. You may, then, fairly direct your energies to attain this goal with a good chance of success. What nations live and increase upon may be trusted to nourish a single individual.

Laying this down as the main point in the treatment, let us see what is likely to be gained by it.

You will learn from the history of the present patient, that turning him into a carnivorous animal does not entirely remove a diabetic's peculiar aliment. Twenty days after all vegetable matter had been cut off from his diet card, and he had been carefully watched by others set to detect any infringement of rules, still the urine is full of sugar. So that it must be derived from some other quarter than the starchy and saccharine constituents of the food. We shall feel less surprise at this formation of sugar from animal matter alone when we call to mind that there is even a normal secretion in which it may be found under even normal circumstances. The milk of carnivora contains it.*

Moreover, sugar may be found in the laboratory by a process of decomposition without the presence of life. Nay, rather, only when life is extinct. The simple application of oxygen will cause some animal substances to be converted into sugar. This has been noticed by Dr. Claude Bernard to be especially the case with the tissues which form the secreting substance of the liver, which, carefully washed from blood and exposed to the air, quickly becomes copiously saccharine. So that your patient has a fertile source in his own body, even if none of the other parts possess the same property. He carries about him two pounds of viscus capable of easy conversion into sugar.

But remark, it is *dead* liver, not *live* liver, which in health is decomposed as above stated. Normal vital action seems to have got another way of removing the hepatic substance, for during life no sugar can be detected as formed from this organ. Diabetes, then, like all diseases of which we know more than the superficial symptoms, turns out to be a death in life—an anticipation of the post-mortem properties of the bodily constituents. This is an additional reason for casting about how best to apply restorative medicine in the treatment, and for urging an ample supply of material for revivifying the frame. If the dying liver is passing off quickly by the kidneys, we must quickly give the patient the wherewithal to make new liver. Now you gain an additional reason for enforcing animal diet in diabetes.

To accustom this patient to leave off by degrees vegetable aliments, I allowed him first captain's biscuit for a fortnight. During that time scarce any weight was gained, and the urine was but little altered. He liked those biscuits very well. I then ordered him bran biscuits, but he said they were so nasty he could not eat them, and he wasted some of his milk in trying to make them palatable. However, he increased in weight by two pounds during two weeks, and made eleven pints less urine weekly than on his first admission; and this, although he drank as much fluid as he felt disposed to take.

*Bensch has put on record the presence of sugar in the milk of bitches fed entirely on meat.

After this Mr. Van Abbot was good enough to give him a supply of the gluten bread sold by that firm. For a week he tried hard to eat it in addition to his former allowance of meat; but I am sorry to say he failed in acquiring a taste for it. His appetite fell off during the experiment; he lost half a pound of the weight he had acquired, and was so annoyed at being pressed to eat the gluten bread that he insisted on returning home on July 12th.

My own feeling is, that we do not act wisely in enforcing a dietary which is really unbearable by the patient in any chronic disease. The great object to be gained is to conciliate the stomach, appetite and fauces, into taking the greatest possible amount of animal food; and if practically you find that the patient eats more by having a biscuit or a crust, or even vegetables with his meals, it is better to allow it him than to act the tyrant.

As to drugs, opium was given to this patient for a week. It did not seem to exercise any influence at all. However, in some cases, it certainly does seem to diminish the excretion of urine, for the amount did not increase again after it was left off. But is that any advantage? or is it only from our education in allopathic prejudices that we reckon on help from such interference? I confess it seems to me that if the blood gets loaded with sugar, as analysis proves that it does, it is better that it should be washed out by an ample diuresis, than that it should remain at the risk of poisoning the tissues. I have never distinctly traced any harm to opium, truly; but I have traced harm to a drug whose action is similar. Cinchona also diminishes the flow of urine; and I once gave that to a diabetic patient. After a short time he got comatose, and died with effusion in the ventricles. The effused serum was loaded with sugar, which I suppose it was the business of diuresis to have washed away.

For this reason I avoid cinchona in diabetes, even when I desire to give tonics for the sake of increasing the appetite. I prefer iron and strychnine. An elderly patient of mine, with moderate diabetes, is now taking those drugs with advantage to his strength and digestion, and without any deleterious action on the kidneys.

The iodide of potassium which you see prescribed on his medicine-card was given on purely empirical grounds. There are no drugs known to do good to the essential phenomena of diabetes; there were no secondary symptoms demanding special medication, so I thought it a fair case for an experiment. The result was, that at all events no harm was done; the patient continued to increase in weight and strength, and did not exhibit any of the usual symptoms of intoxication by iodine.

This is not like substituting an experiment in search of a possible specific in place of rational treatment; such conduct is, indeed, most reprehensible. But here there is no medicine omitted, for there is none to be given that offers any hope of its possessing an alterative agency, and it is a question between either something new or a mere placebo. I shall try the iodide of potassium again on the next pure and uncomplicated case.

People sometimes feel a doubt how far they ought to gratify the patient's unnatural thirst. On this point the same considerations weigh with me which influence my objections to cinchona—I think there ought to be kept up a flow of water through the system in proportion to the abnormal quantity of sugar in the blood, in order that no retention or discharge in unusual places of this material may take place. I therefore let patients drink as much as they feel disposed.

You will find that the demand for drink is closely proportioned to the quantity of sugar required to be got rid of. Thus, when the dietary is changed from starchy to meat food, much less fluid is drunk and much less is evacuated by the kidneys, though no restriction is placed upon the thirst. Such was the case with the lad now lectured upon; during the second week he made twelve pints less urine, though he was recommended to drink as much water as he liked. The specific gravity, also, of the secretion was

not raised, which it certainly would have been had the diminution in quantity depended on any other cause than the diminution of the instinctive call for diluents. I believe the excessive thirst depends on the saccharine contents of the blood; it is, therefore, wise to gratify it, and provide the normal outlet for the abnormal constituent.

On the Treatment of Whooping-Cough by Belladonna and Sulphate of Zinc. By E. GARRAWAY, Esq., M. R. C. S. E.

Until a comparatively recent period the treatment of whooping-cough may justly have been regarded as one of the *approbria medici*. The authorities of the profession not even yet being agreed upon its true pathology, it is no marvel that the treatment has been more or less empirical; that notwithstanding there have been countless "infallible specifics," yet the ordinary duration of whooping-cough, except when the epidemic prevails in a mild form, is still three, and even during the winter as much as six, months.

I am not about to enter into the question of the specific nature of the disorder, whether its seat be in the mucous or muscular lining of the air-passages, in the brain, the spinal cord, the stomach, the pneumogastric nerve or elsewhere. The preponderance of opinion in the present day is largely in favor of its being a nervous disorder, and at least it would appear to have quite as much claim to be so considered as asthma, ague, chorea, epilepsy or other convulsive disorders which it has been found impossible to localize. In mild, uncomplicated cases of whooping-cough, not even functional derangement of any organ can be detected. In the intervals of the attacks of cough and concomitant spasm, a state of perfect health subsists.

The observations I have to offer are solely confined to "treatment," and one form of treatment—viz: that by belladonna and sulphate of zinc. A very extensive prevalence of whooping-cough during the last winter has afforded considerable opportunities of testing the value of these remedies; indeed, I have treated every one of my cases—numbering between fifty and sixty, and these limited to private practice—with zinc and belladonna, to the exclusion of all other remedies. Of course the supervision of anything like bronchitis or pulmonary congestion has required the administration of emetics; but these cases have been rare, and in only two have I had occasion to suspend the belladonna treatment for two or three days, and substitute for it ipecacuanha, antimony, and external counter-irritants. In the comparatively small number of fifty cases, it is not surprising that I have no death to record. The mortality, however, has been exceedingly large—in London amounting to from 80 to 100 a week during several months—once rising to 124. In my own district, the registrar informs me that, in a population of 9000, he recorded from October to April fourteen deaths as due to whooping-cough.

The first three cases I saw occurred in a school. They were boys between the ages of six and nine. The paroxysms in all were moderately frequent and severe; the general health was good. Two were placed under my care; the third was left to take his chance. In eighteen days my patients had entirely ceased to cough, whilst the other boy was in precisely the same state as when I first saw him, and so continued for several weeks afterwards.

A little girl between two and three years old was brought to me, whose fits were described to be of the most violent character; and indeed the poor child's appearance did not belie the mother's statement, for both conjunctivæ were so entirely ecchymosed that the white sclerotic coat was invisible: no blow, however severe, could have produced a more complete pair of black eyes. For a fortnight there was not the slightest improvement, and I was in consequence much troubled to keep my patient up to her medicine;

in one week more, however, the cough was gone, and the ecchymosis had completely disappeared.

Three weeks afterwards the mother came for the same medicine for her infant, eight months old, who coughed and whooped, she told me, a dozen or twenty times in the day and some half dozen times in the night—not a severe case. I exhorted her not to be disheartened for three weeks, but to come regularly for her supplies. She never made her appearance again; and on meeting her some time afterwards, and expressing my regret that the treatment had not been followed up, she replied, "Why, the medicine you gave me lasted a week, and by that time the cough had entirely ceased, and has never returned."

These are samples (which might be multiplied) of the more favorable class of cases. Others were marked by a steady improvement, commencing at once and continuing day by day; but at the same time I must admit that not a few required fully three weeks to make a decided impression. After this period, however, the improvement was most rapid; indeed, treatment was seldom continued beyond the third week. The most lengthened period for which, in any case, belladonna was administered was five weeks. I found that if by this time the cough was not quite gone, it was nevertheless desirable to discontinue the remedy; as it would seem that after the system was thoroughly saturated, a further persistence deranged the general health without any commensurate advantage accruing: the tongue became coated, the appetite failed, and vomiting without cough would occasionally occur. On ceasing, however, to take the medicine, not only did all these untoward symptoms subside, but the remains of the cough vanished with them.

Marsh miasmata appear to render whooping-cough, as they do most other forms of disease, more intractable; and two children I could do nothing with until removed from the swamp in which they resided.

The mode of administering the belladonna was in the form of extract, either diffused in water with the sulphate of zinc and sufficient syrup to make it agreeable to young children, or, to those who were old enough and preferred it, in the form of pills—the dose being from one-sixth to one-fourth of a grain of the extract, and one-half to a grain of the zinc, three or four times a day, steadily increasing the amount till, at the end of three weeks, children of five or six years old would be taking from four to six grains of belladonna, and twice that quantity of sulphate of zinc, daily.

So far as my investigation went, it would appear that both the tolerance of the remedy and the speedy subsidence of the disorder were in inverse proportion to the age of the subject—a child of eight or ten weeks old bearing a much larger proportionate dose than one of eight or ten years, and manifesting a much more rapid improvement. In this I find I am in accord with other observers.

Dilatation of the pupils and indistinctness of vision commonly came on after a few days. When these effects manifested themselves the dose was diminished somewhat; but having been assured by Dr. Fuller, of St. George's Hospital, whose experience of the physiological effects of belladonna has been considerable, that no permanent injury ever resulted from this condition, I did not think it necessary to interfere with the general line of treatment.

In two cases more decided poisonous symptoms were developed. One was a little girl of six, who had reached the amount of six grains daily, and whose pupils had been dilated more or less for a week. This child became one day, as her parents termed it, "silly," delivered wrong messages, gave inapt answers, asked what had become of her sisters when they were present, and talked in an incoherent and ridiculous manner. This state quite passed off the next day by discontinuing the medicines.

The other case was that of a very delicate little girl of four years, who had attained to four grains a day. I was called to her

in the night under the great alarm of her parents. She had been in a state of immoderate mirthfulness and excitement during the evening, and on being put to bed could not be quiet, and at length became delirious, singing, calling for her mamma and nurse, of whose presence she was unconscious, picking at the bed-clothes, seeing imaginary objects—in fine, presenting a train of symptoms very analogous to what we witness in delirium tremens in the adult. This state was succeeded by three or four hours of refreshing sleep, such as the child had not experienced for many nights. On awaking she was perfectly restored, and from that hour the improvement was remarkably rapid. I need hardly say I suspended the remedy for a day, and gave it afterwards in diminished doses.

Such, in brief, has been my experience of the treatment of whooping-cough by belladonna and sulphate of zinc. Which of these two had the greater share in the favorable results I am unable to say, since they were not in any case dissociated; but as similar results have followed the exhibition of belladonna alone in other hands, it is reasonable to conclude that this was the more active agent. It ought perhaps, in fairness, to be recorded that some cases which were cured at the beginning of winter showed a tendency to a return of the disorder when the cold north-east winds of March set in. Few of these cases came under treatment, as the relapse was not of a severe character; when, however, belladonna was given, its effects were marked and immediate.

From the limited data afforded by fifty cases of whooping-cough, it would be presumptuous in me to speak authoritatively as to the propriety of this or any other mode of treatment; nor should I have obtruded these observations were I not impressed with the conviction that the belladonna treatment is not so generally, or at least so universally, accepted as I conceive it deserves; and in this I am borne out by the fact that in one of our best modern works upon the diseases of children—namely, Dr. West's—the very name of belladonna in connection with whooping-cough does not once occur.

On the Therapeutic Properties of Carbolic Acid. By C. CALVERT, F. R. S.

I deem it my duty to draw the attention of the medical profession to the valuable therapeutic properties of the carbolic acid, which I have during the last two years brought under the notice of some of the leading medical practitioners of Manchester and London. Before giving particulars of the chief application of this substance which have been made by these gentlemen, I will first state what carbolic acid really is.

Carbolic acid, hydrated oxide of phenyle, or phenic acid, is a white substance, which crystalizes in long prisms, fusible at 93° Fahrenheit, and boiling at 370°. It has a slight tarry and aromatic smell, resembling that of wood creasote, and is freely soluble in alcohol, ether, and glycerine, partially so in glacial acetic acid, and only slightly so in water, of which one hundred parts will dissolve only three parts of carbolic acid. It is easily prepared by treating the oils of tar, which distil between 350° and 400°, with caustic lye, removing the caustic lye solution from the neutral oils, and adding hydrochloric acid to the alkaline solution, when the carbolic acid is liberated, and rises to the surface as an oily fluid, from which, by distillation, the above-mentioned therapeutic agent is obtained.

My friend and colleague, Thomas Turner, Esq., F. R. C. S., and Senior Surgeon at the Manchester Royal Infirmary, read, at the last meeting of the Lancashire and Cheshire Branch of the British Medical Association, a lengthy paper "On the Uses of Carbolic Acid as a Remedial Agent," from which I extract the following:

"In cases of relaxation of the mucous surfaces, the solution of carbolic acid in glycerine, applied by means of a brush or sponge,

is most beneficial. Thus its use is indicated in polypi of the nostrils, as well as ozena, and in all putrid discharges from the mouth, throat, nostrils, ears, rectum, and vagina.

"I shall next call your attention to the use of carbolic acid in *Diphtheria*, in which disease it is a most valuable remedy used topically to the throat. . . . To apply it I use a sponge mop, which should be used freely, but not saturated, lest a drop should fall into the larynx. The escharotic effect of carbolic acid is confined to the surface to which it is applied, there being no spreading to the contiguous parts, which may happen in the case of nitric acid. The aqueous solution of carbolic acid may be used also as a gargle.

"*Ulcers*.—I apply carbolic acid in different degrees of solution, according to the character of the sore, to carbuncle and ill-conditioned sores.

"*Fistulae*.—I apply it by means of a wax taper used in lighting gas, or, if the size of the fistula will admit of it, I use a cat-gut or wax bougie, taking care to carry it to the bottom of the fistula. I have never succeeded in anal fistula where there is a communication with the gut. In these cases an operation is still necessary.

"*Hæmorrhoids*.—The action of carbolic acid is mainly to corrugate, and therefore to obliterate, the sac of the pile. It coagulates the contents, which may be squeezed out; and by corrugation it empties the pile, by which the two surfaces are brought into contact, and thus the sac is obliterated."

Mr. Turner also, in a private note to me, speaks of the use of carbolic acid to fetid ulcers in the following terms:—"It may be advantageously used, as a solution of one part of acid in forty parts of water, in fetid ill-conditioned ulcers. It alters the action of the blood-vessels, causing a purulent instead of a sanious discharge, and destroys almost immediately the offensive smell of the secretion. In ulcers having a communication with carious bone, or even necrosis, (where the bone is dead,) it has, in its diluted state, a good effect when injected into the sinuses leading to the diseased bones. When there is mere caries or ulceration of the bone, it effects the healing process, and in necrosis it promotes the exfoliation of the dead portion. In gangrenous and all offensive sores, it removes all disagreeable smell and putrescency, and may render the discharge innocuous to the contiguous living and unaffected tissues. In its diluted state, therefore, it is a great boon to patients laboring under that class of disease."

When Mr. Turner wishes to employ carbolic acid in a less diluted state than the aqueous solution, and yet not in its full strength as a caustic, he prefers the following solution. He mixes two drachms of pure carbolic acid in one drachm of liquor potassæ and half a pint of water.

It is with pleasure that I am able to add that Mr. Oscar Clayton, F. R. C. S., and Mr. Campbell de Morgan, F. R. C. S., have informed me of several successful applications which they have made of carbolic acid, confirming many of the results of Mr. Turner's, above described.

Mr. Oscar Clayton states that in two cases of fetor of breath, arising from a diseased state of the mucous membrane covering the tonsils, he applied to the parts a mixture of equal proportions of glycerine and carbolic acid, and with perfect success.

Mr. Campbell de Morgan has also applied the glycerine solution of carbolic acid with success to several cases of lupus.

Dr. James Whitehead, of Manchester, prefers treating this disease (lupus) with an ointment made of half a drachm of carbolic acid to one ounce of spermaceti ointment.

Mr. Oscar Clayton has also successfully employed the aqueous solution to several skin diseases—viz: lepra, tinea capitis, rupia, &c.

Dr. Roberts and other medical men have employed carbolic acid with advantage internally for dyspepsia and other derangements of digestion

Dr. Pattison, of St. John's-wood, writes to me as follows:

"I have prescribed your carbolic acid in several cases of fungoid disease during the last nine months with marked success. In three cases of fungous hæmatodes in which I employed it, the disease in all was checked in a remarkable manner. A thick crust was speedily formed on the ulcerated and bleeding surfaces, the exhausting discharges were completely arrested, and in one case there was great diminution in the size of the fungous mass. Your carbolic acid is almost a specific in cases of anthrax."

I also think it well to insert the following remarks from Dr. Thomas Hughes, M. R. C. S., F. S. A., London:—"Sir: I have used Dr. Calvert's carbolic acid as an external application in cases of sloughing wounds with the most marvellous effect; and in no case was its effect more strikingly manifest than in the case of Rogers, one of your miners, who received such a contusion of the hand as to destroy the arteries leading to the index and little fingers; and, in spite of every effort made to restore the circulation in the fingers, sloughing took place, and which appeared to spread and extend to the hand and arm with such rapidity that if it had not been for the timely application of the carbolic acid, the man would have lost his arm from the most destructive sloughing I ever witnessed. The effect of carbolic acid was so decidedly marked as to leave no doubt of its wonderful effects in checking the spreading of sloughing, and in accelerating the separation of slough. It seemed also to have the effect of promoting the growth of granulations and hastening the healing of wounds. I have used carbolic acid in several other cases with the same happy effect."

I have found it very successful in one or two cases of intestinal worms, given in doses of a teaspoonful of the aqueous solution, in a tumbler of water, morning and evening. I have also applied the water solution externally with perfect success in several cases of psora.

Two eminent French physiologists, MM. Gratiolet and Lemaire, have published a most interesting paper on the Action of Carbolic Acid in arresting Putrefaction; and they have made the important observation that, whilst it does not interfere with chemical fermentations, such as the conversion of amygdaline into hydruret of benzoile, and the conversion of myronic acid by myrosyne, it completely arrests all vegetable and animal fermentations which arise from cryptogamic life. They have also observed that when carbolic acid is mixed with the vaccine virus, it entirely prevents its peculiar action upon animal organization.

These valuable observations of MM. Gratiolet and Lemaire strongly impress me with the idea that the use of carbolic acid might prove of great advantage in the early stages of consumption, if applied in the following manner—viz: by making the patient frequently inhale the vapour of the acid by means of an inhaler containing some cotton-wool saturated with the acid so that the inspired air must pass through the wool. I would at the same time administer a teaspoonful of the aqueous solution, mixed with two ounces of peppermint-water, three times a day. I think also that the same treatment might be advantageously tried in cases of scarlatina and typhoid fever, with the addition of saturating the air of the chamber as far as possible with the vapour, by placing lint or wool steeped in carbolic acid in various parts of the room. I would also administer, once a day, an enema consisting of a weak solution of carbolic acid.—*London Lancet*.

Alcohol from Coal Gas.—A method of extracting alcohol from coal gas has been discovered by a young Frenchman, named Cottelle. The cost is stated to be 25 francs the hectolitre—about one-third the usual cost.

INTERESTING ANALYSES OF ARTICLES IN FOREIGN JOURNALS.

The Relief of Near-Sight without Spectacles. By J. V. SOLOMON, Esq., F. R. C. S.

In a paper read before the British Medical Association by this gentleman, it was argued, on the method of exclusion, that the ciliary muscle must be the chief factor of those changes which produce the highest state of refraction. In myopia, or near-sight, the author said, the refraction of the dioptric media was too great; a condition which he reduced by performing an intraocular myotomy of the ciliary muscle. Mr. Solomon then noticed the serious structural changes which the ophthalmoscope and dissections after death prove to take place in the optic nerve—retina, choroid, sclerotics, &c. An acquaintance with these pathological phenomena, he said, explained the great uncertainty which myopic persons experience in their powers of vision, and the subjective symptoms of congestion to which they are prone; also the not unfrequent occurrences of amblyopia, and sometimes of amaurosis.

The author contended that the infrequency of non-hereditary staphyloma posticum, unattended by atrophy of the choroid pigment, favored the opinion that the choroid, and not the sclerotics was primarily affected in the production of elongation of the antero-posterior axis of the globe. It was evident, he remarked, from all we know of the pathology of myopia, that whatever surgical operation we may adopt for the relief of near-sight, must contain within it not only the power of decreasing the excess of refraction of the dioptric media, but of removing intraocular congestion, which is commonly connected with that state. Observations made at one of the most numerous attended provincial ophthalmic hospitals, and which had extended over a period of nearly two years and a half, and embraced an experience of nearly forty operations, had led the author to the conviction that the said desiderata are more completely supplied by intraocular myotomy than by any other method. Indeed, he knew of no treatment which is easily safe and easy of execution, that exerts the same amount of curative power in cases of subacute and chronic posterior choroiditis.

After describing the ciliary muscle and his method of dividing it, Mr. Solomon said the most striking results from his plan of treatment were afforded by patients under the age of puberty. The operation enabled children to see features with as much distinctness, and at the same distance, as persons whose accommodation was normal. Prevented their acquiring the habit of dropping the lids, and of that *distrail* demeanor which myopics commonly exhibit. It also enabled them to thread a needle, pick a pin from the floor, and read a book at a moderate distance from the eye. A boy of eleven years, who could see features with distinctness at six yards only, in two years after the operation, saw them with clearness at forty yards, and the figure of a man and all his movements at five hundred. He read small pica at thirty-three inches, instead of at six, as before the operation. In adults whose eyeballs are not very wide in their transverse diameters, or their optic nerve completely encircled by a wide horned staphyloma posticum, or their choroids spoiled by extensive atrophy, a normal range for features was frequently acquired. A man, who two years ago could read small pica at nine inches and a half only, and see features distinctly at five yards, now reads at twenty-four inches, sees features at thirty yards, and trees with distinctness at a mile and a quarter.

The paper was illustrated by diagrams of the ciliary muscle, colored drawings and mathematical formulæ, illustrative of the value of the operation in the accommodation of eyes which had been treated upwards of one or two years.

Origin of the Cow Pox.—The Academy of Medicine of Paris has been engaged in discussing some facts of interest which have taken place at Toulouse, in France. The matter from an eruption affecting the legs of a horse was inoculated upon the teats of a cow, and produced vesicles similar to those of cow-pox; the pus, moreover, taken from this cow, having been inoculated on infants, gave rise to vaccine vesicles. It is doubtful, however, whether, in this case the horse suffered from grease or some other eruptive complaint. Jenner considered that grease might be the origin of cow-pox. Experiments have therefore been made with the grease in several countries, but with variable results. It should, however, be recollected that a smith's apprentice, of Chartres, in France, who had not been vaccinated, having shod a greasy horse, presented vaccine vesicles on his hands. The pus from these being inoculated on children, gave rise to similar vesicles; but the same pus sent to the Academy of Medicine at the time, and used for inoculation, yielded no results; while, strange to say, the lymph taken from the vesicles on the apprentice's hand, being also sent to the Academy, was the origin of a series of successful inoculations.—Such was the state of the question when the facts observed at Toulouse became the subject of a report from a committee appointed for the purpose of examining into the alleged phenomena. It is this report, itself reported upon by M. Bosquet, that the Academy has been discussing.

Galactagogues.—M. Turnier and Dr. Highmore both report favorably on the use of galvanism as a galactagogue. In the case of the latter, the fifteenth birth, previous children not being nursed for want of milk, one of Davis and Kidder's machines was applied for about twenty minutes. This was repeated on three successive days, when there was a good supply of milk, and it was discontinued. When the instrument was first resorted to there was no milk being secreted, and the bosoms were quite flaccid. In connection with this subject it may be mentioned that the bruised leaves of the *palmi christi*, as a local application, are extensively and successfully used by European physicians for the same purpose.

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ORIGINAL COMMUNICATIONS.

ART. I.—*Surgical Cases of Interest, treated at Institute Hospital, Atlanta, Ga., May and June, 1864.* By Surgeon D. C. O'KEEFE.

Case 1.—Private W. F. Holmes, company "G," 4th Tennessee cavalry, age 24, occupation farmer, constitution good; wounded May 9th, admitted May 11th, 1864.

History.—Gun-shot wound requiring amputation of left thigh at its middle third, on the field, by flap method. May 20th.—Slight secondary hemorrhage from stump. May 25th.—Stump gaping and bone protruding from inner angle; slight hemorrhage. June 1st.—Bone protruding half an inch. Patient placed under influence of chloroform, muscles dissected up from bone, thorough retraction used, and three-quarters of an inch removed with saw. The flaps were now completely adjusted with sutures, covering bone perfectly. Slight secondary hemorrhage occurred twice in one week after operation. June 30th.—Patient has had chronic diarrhoea since admission; is improving satisfactorily. Stump well cicatrized.

Case 2.—Jarrett Tucker, sergeant, 4th Tennessee cavalry, company "G," aged 40, occupation farmer, constitution good; wounded May 9th, admitted May 10th, 1864.

History.—Gun-shot wound requiring amputation of right thigh at junction of middle with upper third, on the field, by flap method. Stump, on admission, inclined to gape open, and on May 13th one inch of the bone was exposed. May 14th.—One and a quarter ($1\frac{1}{4}$) inches of the bone was removed in the manner prescribed in the preceding case. Before resorting to operation in this case, an unsuccessful effort had been made to cover the bone by means of traction, with adhesive straps and a light wooden frame attached to extremity of stump. June 30th.—No untoward symptom since operation. Stump cicatrized; will be furloughed.

Case 3.—J. W. White, private, company "F," 39th Georgia, aged 40, occupation farmer, constitution feeble; wounded May 18th, admitted May 20th, 1864.

History.—Gun-shot wound, requiring amputation of left thigh at its middle third, on the field, by circular method. On admission, had high fever, with delirium and erysipelatous condition of stump, and tendency to diarrhoea. June

1st.—Changed from hospital building to tent, and improving a little; stump inclined to slough. June 10th.—Bone exposed, general condition better. June 12th.—One and a half ($1\frac{1}{2}$) inches of bone sawed off. June 20th.—Improved since last note; condition at present—tongue and abdomen tympanitic, with irritative fever. The stump sloughed a little, and despite the utmost care a troublesome bed-sore formed on the sacrum. June 29th.—Died of irritative fever.

Remarks.—This was a feeble old man, of small stature and delicate health. I cannot say that the secondary operation materially prejudiced his case.

Case 4.—W. B. Slaughter, private, company "D," 18th Tennessee, aged 20, occupation clerk, constitution good; wounded in battle of Chickamauga, September 19th, 1863, admitted February 20th, 1864.

History.—On admission patient was very feeble and ænemic, having been an inmate of hospital, Kingston, Georgia, from date of wound until his transfer to this hospital. The bone was exposed for half an inch, with a ledge of callus surrounding its extremity half an inch thick. The stump presented a conical shape, with great atrophy of the muscles of the thigh. March 15th.—Suffered a severe attack of inflammatory rheumatism, involving pericardium, which lasted one month. From this time his general condition improved a little; bone still exposed. June 15th.—Slight diarrhoea, still feeble and emaciated, stump has suppurated more or less freely from admission; end of bone black. Efforts were now made to remove the necrosed bone by daily twisting, which succeeded on the 25th, when about six inches of the necrosed extremity of the femur was removed.

Remarks on the four preceding cases.—There is no complication more frequent, perhaps, in hospital, than the exposed end of the femur from retraction and sloughing of the flaps. Whether this is owing to original deficiency of flap, or unavoidable retraction and sloughing of the same, is difficult to say; but it has seemed to the writer that the preference of field surgeons for the flap operation has some agency in the production of this most troublesome result. My notes furnish fifteen cases of this condition in nearly three years hospital practice. The first two were not interfered with, and they died from exhaustion and irritative fever; the last, Slaughter, is still under treatment. The necrosed bone having been removed on the 25th of June, by torsion, nine

months after reception of wound; during this time he has been a great sufferer, and even now he is so much emaciated that his recovery is doubtful. In the remaining twelve cases from one-half an inch to two inches of the bone has been removed by dissecting up the muscles close to the bone, forcibly retracting the tissues with the retractor, and then using the saw. Ten (10) of the twelve (12) have recovered. But little blood is lost in this operation, especially if performed before much callus is thrown out around the extremity of the bone. If that has occurred, it will be difficult to make the dissection without considerable hemorrhage, which will compromise the safety of the patient. In a few cases the covering of the bone may be effected by means of traction with adhesive strips attached to a light frame made fast to the stump, or the extension may be made by means of a weight and roller over the foot of the bunk.

Case 5.—John Moore, sergeant, company "E," 38th Alabama, aged 24, occupation farmer, constitution good; wounded May 9th, admitted May 11th, 1864.

History.—Gun-shot wound, ball entering just over external canthus of left eye, passing upward and backward, lodging under scalp near occipital protuberance, and fracturing skull in whole course of its track. On admission, examination showed that the skull was fractured and both tables depressed in an antero-posterior direction from point of entrance to point of extraction of ball. There was great tumefaction and discoloration of whole face and head; eye-lids closed firmly, which, when elevated, showed contraction of pupils. Patient completely unconscious and unable to move his limbs; pulse feeble and fifty, deglutition almost impossible, and the power of articulation entirely lost. Administered a scruple of calomel with great difficulty, which, on the following day, produced free purgation. May 12th.—Skin cool, pulse fifty, seemed to understand when spoken to. May 13th.—Could see a little out of right eye, pulse sixty; condition otherwise the same. May 14th and 15th.—Bowels acting freely from mercurials, pulse sixty and feeble, skin pleasant. May 16th.—General condition about the same, with constant gaping, brain substance sloughing out from anterior wound, pupils normal. May 17th.—General condition better, appetite improving, pulse ninety. May 18th and 19th.—No appetite, wounds discharging cerebral substance freely, soft tumor near posterior wound. May 26th.—Since last record he has had involuntary actions from bowels, pulse slow and feeble, (40), and was thought to be sinking, abscess near posterior wound opened and discharged freely, whole scalp and fractured portions of skull soft and yielding to the touch. From 26th to 30th condition somewhat better, brain still sloughing, nods his head when spoken to. June 1st.—Patient partially conscious and was transferred to a tent, can articulate a few words, several loose spiculæ of bone were removed, pulse regular. There is now well marked hemiplegia of right side. June 30th.—Since last date he has gradually but steadily improved, and is entirely conscious, but articulates imperfectly; appetite good, sits up on his bed daily, and is rapidly gaining strength. Tumefaction has subsided, revealing de-

pressed bone to the extent of six inches in length by four in width, wounds opened and suppurating.

Remarks.—This is a remarkable recovery from a severe and extensive injury of the skull. He is now convalescent, and will be sent home on furlough in a few days.

Case 6.—W. W. Gary, sergeant-major, 4th Georgia battalion, S. S., aged 18, occupation student, constitution good; wounded May 14th, admitted May 15th.

History.—Gun-shot wound, ball entering left groin at middle Puopart's ligament, injuring femoral artery and passing out near os coecygis, on same side. On admission, the wound of entrance was found enlarged, and the patient stated that the femoral artery had been tied at the field hospital, after a loss of a great deal of blood, no chloroform being used. Patient quite ensanguined, pulse 100, skin cool, very little swelling of limb, but complained of great pain in the left foot and leg. May 22d.—Since admission has had marked febrile paroxysms in the afternoon, pulse being 80 in the morning and 120 in the evening. Quinine was freely administered for this condition, with some apparent success; limb much swollen, with some discoloration, wounds healthy, but suppurating very freely. A distinct thrill perceptible to touch and auscultation over the whole of "scarpus triangle," but no swelling or tumor of the parts whatever. Constitutional symptoms favorable, though pulse was full and quick, with general arterial excitement. This condition lasted until the 27th of May, when hemorrhage occurred, about one quart from the posterior wound. Much debility, ænema and fever followed this hemorrhage, with a chill on the 29th of May. May 31st.—Another slight hemorrhage, about two (2) ounces, from the posterior wound, which occurred while having a motion from the bowels. June 1st.—Died. Asthenia.

Remarks.—The aneurismal thrill in this case was very perceptible, although there was no appreciable tumor. The hemorrhage evidently proceeded from some of the gluteal arteries, and hence no surgical interference was deemed advisable. The patient could give no reliable account of the operation performed on the field.

Case 7.—S. H. Anderson, lieutenant, 34th Mississippi, company "B," aged 42, occupation druggist, constitution good; wounded May 14th, admitted May 22d, 1864.

History.—Gun-shot wound, ball entering near upper and posterior border of right os innominatum, passing obliquely downward through upper portion of rectum towards left thigh, lodging. On admission patient was suffering intense pain, with daily febrile exacerbations and constant fecal discharges from wound, which was suppurating very freely. Patient continued in this condition until May 30th, when diarrhœa set in, which continued, except when controlled by opiates and astringents, until his death, on June 5th, 1864.

Case 8.—W. A. Tatum, private, company "B," 12th Tennessee, aged 25, occupation farmer, constitution good; wounded May 17th, admitted May 18th, 1864.

History.—Gun-shot wound from minie ball, entering at upper edge of forehead on the right side, fracturing the

right parietal bone, causing depression of both tables of the skull. On admission, patient was fully conscious, free from all pain and able to walk about the ward, pulse normal; examination of wound showed that he had been trephined on the field, and the patient stated that the operation had been performed one hour after reception of injury, and that all spiculæ of bone had been removed. May 20th.—Pulse 70, slight head-ache. May 21st.—Doing well, symptoms improved. May 22d.—Severe pain in head and slight fever in afternoon. May 23d.—No fever during day, but great pain in right eye. May 24th.—Doing well; no pain. 25th.—Patient very dull, appetite gone, pulse feeble and intermittent. 26th.—Same condition, except slight rigor at 11 o'clock, A. M. 27th.—General condition unchanged, but great tumefaction of scalp and face. 28th and 29th.—Pulse 65 and feeble, partially unconscious, feverish in afternoon. 30th and 31st.—No change except free sloughing of cerebral substance. June 1st.—Died.

Remarks.—This is the second gun-shot fracture of the skull, received from the recent action at the front, on which the trephine was used, and both have terminated fatally.

Case 9.—J. W. Chandler, private, company "C," 54th Georgia, aged 40, occupation farmer, constitution enfeebled by diarrhoea of fourteen months duration; wounded May 18th, admitted May 20th, 1864.

History.—Gun-shot wound requiring amputation of left thigh, middle third, by circular method. Stump sloughed from admission, and the diarrhoea could not be checked. Died June 2d, 1864.

Case 10.—J. N. Murphy, private, 37th Alabama, company "H," aged 27, occupation farmer, constitution moderate; wounded May 9th, admitted May 11th, 1864.

History.—Gun-shot wound from a spent ball entering right knee joint near internal condyle of femur. On admission, leg and thigh were greatly swollen, general condition very unfavorable. This condition continued until the 15th of May; wound at this time suppurating freely. From this time to June 1st the discharge from wound was very free, with considerable febrile action, night sweats and diarrhoea. There were also bronchitis and a chill. From June 1st to 10th thigh more swollen and very tender, diarrhoea controlled, condition otherwise unchanged. 10th to 20th.—Not much changed, free incision made for exit of pus just above wound, debility decided, with a troublesome cough. June 23.—Transferred to tent, another incision below wound, a black slough two (2) inches square formed, embracing wound. June 30th.—Condition somewhat more favorable, pulse 80 to 90, diarrhoea controlled, slough improving, but debility still great.

Case 11.—F. M. Robinson, sergeant, 2d Kentucky, company "I," aged 26, occupation farmer, constitution moderate; wounded May 14th, admitted May 17th, 1864.

History.—Shell wound over right parietal eminence, fracturing both tables of skull at that point to the extent of a half inch square, with depression of a portion of both tables to same extent. The skull was denuded over a surface as

large as the palm of the hand. There was also a severe flesh wound about two inches square near inferior angle of left scapular. On admission, patient was conscious, but reports that he was unconscious for fourteen hours after receipt of injury. Great pain, with ecchymosis extending round right eye and over the face, pupils contracted, pulse slow and feeble, skin cool. From this time until 23d condition about the same, wound did not suppurate, suffered great pain over whole head, for which opiates were freely given. 25th.—Wound began to suppurate, and a soft fluctuating tumor formed, extending over left side of scalp and left eye. 30th.—Wound began to slough badly, both of scalp and back, some disposition to become gangrenous, also diarrhoea. June 1st.—Changed to a tent by himself, the object being fresh air and quietude. June 8th.—No change since last note, except convulsion on this day, followed by another on the 9th. June 10th.—Very cheerful, pulse regular, appetite good, wounds more healthy. June 11th.—Late at night had another convulsion. These convulsions were slight, not lasting over one to two minutes. June 12th.—The depressed plate of bone, half an inch square, was removed by sawing through a small triangular piece of the outer table with saw. The removal of this piece of bone gave easy access to the depressed portion, which, with several spiculæ, was removed with forceps and elevator. About a tea-spoonful of pus, with disorganized membranes and cerebral substance was removed at the same time; chloroform was used during the operation. 13th.—Very cheerful, no recurrence of convulsions. June 14th.—Another slight convulsion. June 30th.—Has kept steadily improving, wounds in a healthy, granulating condition, the large surface of denuded skull seems to be diminishing and covering over slowly. The pulse has not been over 90 at any time since his admission. There is every prospect of his recovery. There has been no paralysis.

Case 12.—S. H. Lary, private, Hiris' Battery, aged thirty-five, occupation farmer, constitution good; wounded May 26, admitted May 27, 1864.

History.—Gun-shot wound, ball entering on anterior aspect of forearm, two inches below external condyle, fracturing radius and ulna, and passing out three inches above on the inner side of the arm; also, gunshot wound, ball passing through adductor muscles of right thigh and making its exit above Poupart's ligament. On admission the patient stated that he had laid on the field from ten o'clock, A. M., till after dark on May 26, during which time he received the second wound. On the 27th he was moved in a wagon from the battlefield of New Hope Church to Marietta, a distance of about fifteen miles, and thence by rail to Atlanta, twenty miles. He was received in hospital twelve o'clock at night of the 27th. On examination of the injured limb, the whole of the inside of forearm was of a purplish dark color; no pulsation of radial artery. All the appearances of the limb indicated that it was rapidly passing into a state of inflammatory gangrene. Amputation by circular method was performed on morning of the 28th at junction of upper with middle third; chloroform was used; there was but little blood

lost and re-action was speedy and complete; stump did well until June 1, when an offensive discharge with sloughing action commenced—general condition moderate. June 6—Slough began to separate; some indications of pyæmia now manifested themselves. June 7—Rigors and vomiting, evidently sinking. June 10—Died.

Remarks.—This man in all probability would have recovered, had he been operated on in the field. The same unhealthy action attacked the stump which involved the whole forearm before the operation. The severe wound in the groin also added much to the gravity of the case. He was isolated and kept in a small room by himself immediately after operation.

Case 13.—Virgil M. Lassiter, Thirty-Second Texas Cavalry, company "E," aged seventeen, occupation student, constitution good; wounded May 20, admitted May 21, 1864.

History.—Gunshot wound of middle third of right leg, badly fracturing both bones. On admission leg very much swollen, but no constitutional disturbance. This condition continued until June 1, when his system began to sympathize with the cruel injury, wounds enlarging but not suppurating healthily; pulse frequent. Constitutional disturbance became more marked from day to day, and on June 5th amputation of the limb was performed at the knee-joint, through the condyles. A long semilunar flap was obtained anteriorly, and a short one posteriorly, by transfixion, the patella being removed. Chloroform was used and re-action favorable. June 9—Considerable sloughing of posterior flap, with some constitutional disturbance. June 10—Slight secondary hemorrhage. From this date to 20th improved steadily; stump cicatrized beautifully. From 20th to 30th has suffered severely from paroxysmal fever, for which quinine has been freely used, and which is now abating. Prospect of recovery favorable.

Case 14.—W. J. Young, private, Sixteenth Louisiana, company "A," aged twenty-five, occupation farmer, constitution good; wounded May 8, admitted May 9, 1864.

History.—Gunshot wound, ball entering near middle of posterior border of scapulae, two and a half inches from the spine, and passing upwards, made its exit anteriorly, fracturing the clavicle at its middle third. On admission patient stated that he had had profuse hemoptysis and dyspnea, with copious hemorrhage from wound, immediately after reception of injury. There was little or no constitutional disturbance. May 11—Cough and fever, which lasted several days, and for which anodynes with tr. aconite were given. May 15—Wounds suppurating freely, cough subsided. May 24—Posterior wound nearly healed; improved steadily from this time to June 4, when he was furloughed home in a convalescent condition.

Remarks.—This clearly seems to have been a penetrating wound of the chest, from which the recovery was very speedy and satisfactory.

Case 15.—M. V. Temples, sergeant, company "A," Second Arkansas regiment, aged twenty-four, occupation farmer,

constitution enfeebled by previous wounds; wounded May 8, admitted May 9, 1864.

History.—Gunshot wound, ball entered just in front of left ear, passing upwards and forwards, made its exit just above the right eye. On admission patient was perfectly rational, with no constitutional disturbance; could see but little with right eye, and said that vision of left eye was lost from time of wound. May 11—A little wandering, pulse slow, has taken calomel frequently in purgative doses. May 16—Rational, with some appetite; 18th to 26th—Unconscious, but seemed at times to understand when spoken to very loudly; can still take food, but is very feeble and emaciated; involuntary fecal discharges; wounds suppurating very freely. June 1—Transferred to a tent, improved a little, but died June 8, 1864, of asthenia.

Case 16.—J. F. Whitaker, private, company "K," Eighth Tennessee regiment, aged twenty-six, occupation farmer, constitution impaired by syphilitic taint; wounded May 17, admitted May 18, 1864.

History.—Gun-shot wound, ball entering just behind the right internal malleolus, and passing out at external malleolus, badly fracturing the lower extremity of fibula. On admission patient suffered great pain, with much constitutional disturbance; bowels alternately loose and constipated; wound of exit unhealthy. June 1—Foot became dark and cold, and wound assumed a gangrenous appearance, which increased until June 12, when amputation of leg was performed at junction of lower with middle third. The circular method was employed; chloroform was used, and the re-action was good. Examination of amputated limb revealed extensive fracture of lower extremity of fibula, and on opening into the ankle joint with disease of all its structures. Patient did well for four days after operation, when stump was attacked with unhealthy action. June 22—Sloughing of stump ceased and general condition improved. June 30—Condition, though critical, is still somewhat promising.

Case 17.—C. J. Collins, private, company "G," Fifty-Eighth Alabama regiment, aged forty-five, occupation farmer, constitution feeble; wounded May 11, admitted May 12.

History.—Shell wound of upper third of left leg, badly fracturing the tibia and requiring the removal of large spicule of bone on the field. On admission, general condition unfavorable; slight fever and tendency to diarrhoea, with sloughing of wound. May 18—Somewhat improved, granulations healthy. June 10—Diarrhoea, wound looks pale. June 15—Diarrhoea increased, anorexia and fever. These symptoms, with sloughing wound, continued to increase until June 25, when a marked improvement took place. June 30—Wound healthy, general condition promising.

Case 18.—T. D. White, private, company "C," Fifty-Eighth Alabama regiment, aged thirty, occupation farmer, constitution good; wounded May 14, admitted May 16, 1864.

History.—Gunshot wound of left shoulder-joint, fracturing bone composing same; also of right foot, fracturing first metatarsal bone. On admission had little or no constitutional

symptoms, but on May 29 pyæmic symptoms set in and he died June 1, 1864.

Case 19.—E. Hufftlicker, private, company "I," Thirtieth Mississippi regiment, aged thirty-eight, occupation farmer, constitution good; wounded May 15, admitted May 17, 1864.

History.—Gunshot wound of left arm, requiring amputation at the shoulder-joint on the field. On admission condition very unfavorable. May 18—Erysipelas involved the stump and gradually extended up the neck and over the face, and partially over the body. June 1—Erysipelas was in a great measure arrested by the free use of quinine and iron, but he died June 5, of cerebral symptoms.

Case 20.—Joseph Step, private, company "I," Fortieth Georgia regiment, aged twenty-nine, occupation farmer, constitution good; wounded May 20, admitted May 27, 1864.

History.—Gunshot wound, ball entering just below the angle of right inferior maxilla and passing through the neck, made its exit about a corresponding point on the opposite side, same ball also fractured the left arm, causing amputation of same at its upper third on the field. On admission patient very weak from loss of blood; stump inclined to slough; could only swallow liquid nourishment; considerable constitutional disturbance. The symptoms increased in gravity until June 7, when secondary hemorrhage occurred from both wounds of the neck. Died June 8.

Case 21.—J. J. Shanks, sergeant, company "A," Seventeenth Alabama regiment, aged twenty-five, occupation farmer, constitution good; wounded May 20, admitted May 22, 1864.

History.—Extensive shell wound of outer side of left foot. On admission general condition good, wound inclined to slough. May 25—Wound cleaned out and granulations healthy. June 1—Pyæmic symptoms set in, of which he died June 8, 1864.

Case 22.—Thomas Cannon, private, company "D," Fifth Confederate, aged thirty, occupation boatman, constitution good; wounded May 16, admitted May 18.

History.—Gunshot wound, ball entering at right acromion process, fracturing the clavicle and passing through the muscles of the back of the neck, made its exit one inch below the lobe of left ear. On admission had high fever, with tendency to diarrhoea. May 25—A soft circumscribed abscess formed over middle of right clavicle, which on the 27th turned of a dark color and sloughed. May 31—A well-marked case of gangrene. June 7—Had a chill. June 9—Died.

Case 23.—J. Holden, sergeant, company "E," Second Arkansas regiment, aged twenty-two, occupation farmer, constitution good; wounded May 14, admitted May 16, 1864.

History.—Gunshot wound of left elbow joint, causing amputation (by flap method) of left arm at its middle third on the field. On admission patient prostrated from loss of blood and high fever; seemed to improve up to June 1, but still very feeble; stump cicatrizing well. June 3—Pyæmic symptoms developed themselves, of which he died June 18.

Case 24.—W. H. Young, private, company "E," Third

Georgia Cavalry, aged eighteen, occupation student, constitution good; wounded June 11, admitted June 12, 1864.

History.—Gunshot wound, ball entering the abdomen on a line two inches above anterior superior spinous process of ilium on the right side, ball lodging. On admission there was profound constitutional disturbance, nausea and vomiting, retention of urine, &c., which continued until his death, June 13, 1864.

Treatment.—Opium to a point short of narcotism. No autopsy could be obtained in this case.

Case 25.—G. W. Mosely, private, company "E," Second Missouri regiment, aged twenty-one, occupation clerk, constitution good; wounded June 1, admitted June 2, 1864.

History.—Gunshot wound, ball entering at posterior extremity of spine of right scapula, fracturing same and lodging; extracted at same point. On admission high fever, wound suppurating very freely, right arm paralyzed. June 18—Arm much swollen, wound very unhealthy. June 19—High fever, arm still much swollen from shoulder to hand. June 20—Sinking, arm in a gangrenous condition. June 21—Died.

Case 26.—S. D. Cannon, private, company "D," Second Alabama Cavalry, aged twenty-two, occupation merchant, constitution feeble; wounded May 18, admitted May 20.

History.—Gunshot wound, requiring amputation of left leg, just below the tubercle of tibia, on the field. On admission patient much depressed; fever, with retention of urine; stump greatly swollen, with a tendency to slough. His condition became worse from day to day until his death; on the 25th of June, from sloughing of stump and irritative fever.

Remarks.—This was a flap operation, most of the flap being obtained from the muscles of the calf.

Case 27.—Patrick Goode, corporal, company "G," Twenty-Sixth Tennessee regiment, aged twenty-two, occupation student, constitution enfeebled by dyspepsia; wounded May 15, admitted May 17, 1864.

History.—Gunshot wound, requiring amputation of right thigh at its lower third, on the field, by flap method. This patient suffered from admission with dyspeptic symptoms, daily nausea and vomiting, with a quick pulse which could not be controlled. June 17—Chill; stump remarkably healthy and cicatrizing rapidly. June 23—Two chills. June 24—Two chills. From this time he failed rapidly, and died, of asthenia, June 27, 1864, with his stump healed.

Case 28.—W. H. Smith, private, 32d Mississippi, company "I," aged 19, occupation student, constitution good; wounded June 16th, admitted June 18th, 1864.

History.—Extensive shell wound over sacrum, exposing and fracturing the bone at the right sacro-iliac junction. This wound was 12 inches long by 8 wide. Had rigors for several days before death, which occurred June 28th, 1864.

Case 29.—J. H. Harrison, private, 42d Georgia, company "G," aged 25, occupation farmer, constitution good; wounded May 13th, admitted May 23d, 1864.

History.—Gun-shot wound, ball entering on inner side of tendo-achilis and passing directly forward beneath internal

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maleolus, partially involving ankle-joint. On admission, wound very painful; foot and ankle much swollen. May 30th, wound suppurating freely; healthy in appearance and less painful; a small loose angle of bone was exposed over internal maleolus, which was removed. June 9th, leg highly inflamed; swollen and painful from knee to ankle; suppurating from wound ceased; great constitutional disturbance; irrigation was used for inflamed limb; stimulants, quinine, iron, and nutritious diet, used internally. June 12th, inflammation increasing and threatening gangrene; pulse weak, scarcely perceptible. He lingered in this condition until death on the 16th.

Case 30.—Geo. E. Bowman, private, 9th Arkansas, company "E," aged 30, occupation farmer, constitution good; wounded June 18th, admitted June 22d, 1864.

History.—Gun-shot wound of chest, ball entering at a point two inches to the right of sternum and one inch below clavity, and passing in an oblique direction toward right shoulder, lodged. The same ball inflicted a severe wound on the hand which was in an elevated position. Hemoptysis followed immediately upon receipt of injury, and patient has coughed up blood more or less freely since. No trace of the ball can be found. June 30th.—Up to this date patient has suffered no untoward symptom, except a slight hacking cough, which yields readily to mild expectorants. He was furloughed home in a convalescent condition.

Case 31.—Capt. S. M. Rawlston, 6th Georgia cavalry, company "D," aged 38, occupation farmer, constitution good; wounded May 10th, admitted May 19th, 1864.

History.—Gun-shot wound, ball entering the left fore-arm anteriorly about two inches from elbow-joint, and passing obliquely upwards made its exit just above olecranon process, on the back of arm; great hemorrhage followed the injury. On admission arm very painful; wound suppurating freely; no radial pulsation at wrist. June 5th, patient has done well up to this time; had a chill, followed by fever; suppuration diminished; arm more painful. For this condition, quinine was used in forenoon; aperients and poultice to arm. June 13th, parts around elbow continues red, swollen and painful; free discharge of pus from incision. From this time forward patient steadily improved, and was furloughed June 29th.

Case 32.—Z. Castlebury, private, company "D," 23d Alabama, aged 19, occupation student, constitution feeble; wounded May 13th, admitted May 22d, 1864.

History.—Gun-shot wound upper third of right arm, badly fracturing and comminuting the same for several inches of its extent. Resection performed on the field on the day of injury, removing about six (6) inches of the humerus. On admission patient doing well, wound presenting a clean, suppurating surface. June 25th.—Patient doing well and furloughed this day.

Case 33.—Edward Dignin, private, company "B," 5th Confederate, aged 30, occupation farmer, constitution good; wounded May 15th, admitted May 17th, 1864.

History.—Gun-shot wound of left thigh, just above the knee, implicating joint and requiring amputation of the thigh

at junction of lower with middle third, on the field, by flap method. June 30th.—Has progressed favorably, and is now doing well.

Case 34.—H. C. Coles, private, company "B," 4th Tennessee cavalry, aged 18, occupation student, constitution good; wounded May 19th, admitted May 20th, 1864.

History.—Gun-shot wound requiring amputation of right leg just below the knee, on the field, by circular method. June 30th.—Patient has progressed most satisfactorily, except a slight exposure of the spine of tibia, which, in a few days, became covered over. Furloughed this day.

Case 35.—R. E. Paxton, private, company "E," 9th Mississippi, aged 20, occupation farmer, constitution good; wounded May 15th, admitted May 19th, 1864.

History.—Gun-shot wound, ball passing through and comminuting both bones of the forearm. Amputation performed on the field same day, just below the elbow joint. May 29th.—No untoward symptom. Patient furloughed home to day.

Case 36.—J. F. Ragsdale, private, company "I," 2d Georgia cavalry, aged 25, occupation farmer, constitution good; wounded May 17th, admitted May 22d, 1864.

History.—Gun-shot wound, ball passing directly through the elbow joint. Amputation on the field at its upper third, leaving a short but beautiful stump. May 29th, patient furloughed this day, having never had a bad symptom.

Case 37.—W. J. Vandigriff, private, company "I," 18th Tennessee, aged 20, occupation farmer, constitution good; wounded May 27th, admitted May 28th, 1864.

History.—Gun-shot wound just above the elbow joint, producing a compound comminuted fracture of humerus and severely mangling the soft parts. June 30th, patient has done well; no bad symptoms; will be furloughed home in a few days.

Case 38.—R. J. Fleming, sergeant, company "D," 20th Tennessee, aged 25, occupation farmer, constitution good; wounded May 14th, admitted May 15th, 1864.

History.—Gun-shot wound requiring amputation of right leg just below the knee, on the field. May 25th, stump sloughing; dark offensive purulent discharge from stump; end of tibia exposed; no constitutional symptoms; appetite good and sleep refreshing. May 29th, flap re-adjusted by means of sutures and adhesive strips. June 30th, stump cicatrized well.

Case 39.—Lieut. A. J. Stuart, Hoskins' Mississippi Battery, aged 25, constitution good, occupation farmer; wounded May 19th, admitted May 21st.

History.—Cannon-shot wound requiring amputation of left thigh at middle third. On admission patient was doing well; stump well closed; free from pain and suffering very little. May 27th, occasional oozing of blood from stump. 29th, oozing still continues from same point within and behind the flap. May 30th, oozing of blood still continues more freely; sutures divided and flap separated to ascertain the cause of hemorrhage. An immense clot of dark blood filled up the cavity behind the flaps, created by the sloughing of the mus-

cles; the hemorrhage was probably due to sloughing or degeneration of muscles; the structures under the clots were dark and pale and still disposed to ooze blood. The cutaneous portion of the flap was perfectly healthy and had partly emitted by the first intention over the sloughing mass of muscular tissue; the stump now thoroughly cleaned, cauterized with nitrate of silver, and dressed with lint saturated with chlorinated soda. This dressing was renewed for several days when the stump was found discharging healthy pus and all oozing of blood had ceased. June 30th, has progressed favorably from last record and now fairly convalescent.

Case 40.—Jno. R. Jones, private, company "C," 37th Mississippi, aged 20, occupation farmer, constitution good; wounded May 9th, admitted May 16th, 1864.

History.—Gun-shot wound, ball entering the arm about its middle third, and passing from behind forwards, fractured the humerus extensively and lodged just behind the skin in front. The ball and several fragments of bone were removed on the field. On admission, arm much swollen and exceedingly painful; suppurating profusely and pus burrowing towards fore-arm. May 22, spiculae of bone removed; wound has healthy appearance but suppurating profusely; splints and roller bandage applied to arm, the latter commencing at the hand. From this time forward the patient slowly improved until June 16th, when he was furloughed home in a promising condition.

Case 41.—Lieut. J. F. Stewart, company "F," 33d Alabama, aged 30, occupation farmer, constitution good; wounded May 28th, admitted 29th, 1864.

History.—The following account of the injury and treatment, was furnished the patient by Surgeon E. A. Flewellen, at Marietta: "Gun-shot comminuted fracture of the radius and ulna," ball and attached fragments of bone removed; sharp points of extremities also removed. It is not believed that the elbow joint is laid open, but there is some doubt whether the ulna may or may not be fissured in the joint. On admission patient did well. In a day or two afterwards suppuration set in and has continued since in the greatest profusion. Pus of a dark grumous character flowed from the wounds in the greatest quantity, and also from punctures made in different parts of the arm. June 30th, patient has continued to grow worse and to all appearances is now rapidly sinking from exhausting suppuration.

Case 42.—N. J. Duke, private, Johnson's Battery, Artillery, aged 25, occupation farmer, constitution good; wounded May 13th, admitted May 21st, 1864.

History.—Gun-shot wound, ball entering the right arm on the outer side about two inches below the shoulder joint, passing directly towards the chest and lodging. On admission patient doing well; has had hemoptysis since reception of injury; no constitutional symptoms; wound healthy, with little or no suppuration. May 22d, considerable pain in right side; expectorates blood; no suppuration from wound; poultice to wound; opium and ipecac to relieve cough. May 27th, bloody expectoration still continues freely, with pain in side; slight fever; tincture of aconite and tincture of opium pre-

scribed, with pepper poultice to side. June 1st, continues to expectorate bloody mucus, which has the appearance of a clot of blood which had been subjected for a time to the action of water; seized in afternoon with sudden very acute pain in side corresponding with lower lobe of right lung; cough or deep inspiration causes intense pain; pulse excited; skin hot; expectoration more bloody; ordered calomel 20 grains, Dover's powders 10 grains, to be given at once. June 2d, pain in side less intense; cough still very troublesome, but less painful; expectoration much augmented; bowels moved freely this morning; resume the aconite mixture. June 8th, patient doing well; wound rapidly healing; fractured humerus uniting; pulmonary trouble very slight, although he continues to cough up bloody mucus occasionally. June 13th, bloody expectoration and cough have ceased. June 30th, doing well; furloughed.

Case 43.—A. Oliver, private; company "G," 30th Alabama regiment, aged 45, occupation farmer, constitution robust; wounded May 27th, admitted June 3d, 1864.

History.—Gun-shot wound, ball entering one-and-a-half inches to the left of the ensiform cartilage and passing obliquely downwards over the cartilages of the last two ribs, lodged. Patient thinks the ball has lodged in the pelvic cavity, from a peculiar sensation as though a loose foreign body were present in that region, but examination per rectum failed to discover it. On admission wound very painful; great tenderness upon pressure over epigastric and left hypochondriac regions; some febrile excitement internally, and urinal functions normal. June 5th, great irritability of stomach; wounds suppurating and looking well; bowels loose and attended with great tenesmus. From this time forward patient gradually improved, until the 15th of June, when he was seized with a chill, followed by fever and sloughing phagedæna of wound. Patient was then removed to a tent. June 30th, sloughing action ceased; wound looks healthy; patient rapidly recovering.

Case 44.—Jas. Cotton, private, company "I," 33d Alabama regiment, aged 25, occupation farmer, constitution good; wounded May 27th, admitted June 3d, 1864.

History.—Gun-shot wound, ball entering the back about three inches to the right of the spine, opposite the fifteenth dorsal vertebra and passing in an oblique direction towards the spinal column, lodged. On admission appearance of wound healthy, slightly suppurating; complete paralysis of lower extremities with loss of sensation; also, paralysis of bowels and bladder. Two days after admission erysipelas of a very diffused character was developed, which continued to spread rapidly until it almost enveloped the whole body. June 9th, died.

Case 45.—James M. Smith, private company "D," 33d Alabama, aged 20, occupation farmer, constitution good; wounded May 27th, admitted June 3d, 1864.

History.—Gun-shot wound, ball entering the thigh in the middle of its upper third anterior aspect, a little to the outer side of median line, and passing directly backwards made its exit on the posterior lateral aspect of the limb, fracturing

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the femur in its course. On admission wound painful, but little suppuration; limb very much swollen as far as the knee; removed splints applied by field Surgeon and applied cold water dressing to the entire thigh. June 13th, doing well except considerable curvature of the thigh outwards, with undue shortening of the limb. After extension and straightening of the limb, a light, single, long splint with foot board, was applied to its outer side, extending from the foot to a point above the hip, and confined to the body. An opening was cut out to permit the dressing of the wound. By this means the length of the limb was increased about three inches and the deformity overcome. June 30th, has steadily improved since last note and is now doing well. There is a good prospect of recovery in this case.

Case 46.—W. H. Hagy, private, company "F," 58th North Carolina, aged 20, occupation farmer, constitution feeble; wounded May 9th, admitted May 19th.

History.—Gun-shot wound, ball entering the thigh at junction with middle and upper third, and passing directly from before, backwards, produced a comminuted fracture of the femur. On admission wound painful and suppurating freely; patient feeble and troubled with severe cough and diarrhoea. June 13th, patient's general condition no better. Several fragments of detached bone can be distinctly felt beneath the skin near the wound of entrance. Patient was put under the influence of chloroform and a free incision was made on the anterior surface of the thigh, and about one dozen of large fragments of bone which were detached, were removed. From this time forward the patient grew gradually worse and more debilitated, (as he had done before the operation,) until worn down from irritation, diarrhoea, and the excessive drain of suppuration. He died June 29th, 1864.

Case 47.—Lieut. Jas. Jackson, company "F," 48th Tennessee regiment, aged 27, occupation farmer, constitution moderate; wounded May 13th, admitted May 18th, 1864.

History.—Gun-shot wound, ball entering at the middle third of thigh anteriorly, produced a very severe fracture of the femur. On admission wound very painful; beginning to suppurate; general condition feeble; placed the limb in a straight fracture box and applied cold water dressing; ordered stimulants and nutritious diet. May 24th, wound suppurating profusely; odor very offensive; great debility; wound swollen and painful even below the knee. In this way the patient grew worse from day to day, suffering from the great drain of suppuration and the irritation of high febrile excitement every afternoon. Quinine, tonics, stimulants, &c., were administered freely, but to no purpose. The patient died June 9th—æsthenic.

Case 48.—Berrien Summerlin, private, company "G," 47th Georgia, aged 35, occupation farmer, constitution ordinary; wounded May 13th, admitted May 18th, 1864.

History.—Gun-shot wound, ball entering the back about two-and-a-half inches to the left, and directly opposite the middle dorsal vertebræ, and passing obliquely forwards, made its exit between the fourth and fifth floating ribs, about four inches to the left of the median line. On admission wound

of entrance clean and healthy and suppurating kindly. Wound of exit closed, and has the appearance of a hard tumor; general condition good; free from cough, fever and pain. June 4th, patient continued to improve until to-day, when he was seized with a troublesome hacking cough, each paroxysm of which caused a jet of dark sanious and very offensive fluid to flow from wound of entrance; no pain, and but little constitutional disturbance; ordered ipecac and opium for cough; nutritious diet, &c. June 5th, dark sanious matter continues to flow from wound of entrance in forcible jets during each expiratory efforts of coughing; during inspiration air rushes into the wound with a hissing sound; cough continues troublesome, but without expectoration, except white mucus; auscultation reveals, both amphoric respiration and metallic tinkling; patient has considerable fever; general treatment continued. In this way the patient continued, without much change of interest, until June 13th, when the dark sanious discharge was substituted by healthy pus in moderate quantities. Shortly after this an abscess formed around the wound of exit and discharged freely of pus. June 30th, patient doing well, with a good prospect of recovery.

Case 49.—B. F. Ragsdale, private, company "A," 25th Arkansas, aged 25, occupation farmer, constitution feeble; wounded May 18th, admitted May 22d, 1864.

History.—Gun-shot wound, ball entering the side about midway the cartilage of the last floating rib, on right side, and passing obliquely backwards, made its exit between the spinal processes of second and third lumbar vertebræ; no paralysis followed the injury. On admission patient was doing well; aperture of exit discharging pus mixed with blood; general condition feeble.

Treatment.—Cold water dressing, stimulants and opium. June 1st, no change since last note. He was now seized with severe rigors every few hours, followed by high febrile excitement; wound discharging freely of dark grumous pus, mixed with a cheese-like matter resembling grains of sand floating in a fluid; tongue dry; pulse quick and feeble; trembling of limbs and delirium. From this time until the 4th, the symptoms of pyæmia became fully developed, with great prostration of all the vital forces and death.

Case 50.—E. H. Meyers, company "C," 19th regiment Alabama volunteers, aged 22, constitution good, occupation farmer; wounded May 20th admitted May 21st, 1864.

History.—Gun-shot wound, ball passing from before, backwards, and lodging just under the skin opposite and to the inner side of the head of the humerus, from which it was removed on the field. On admission the wound looked clean and healthy and discharged pus quite freely. May 25th, patient not doing well; wound has healthy appearance, but his general condition is unfavorable; patient complains of great pain in axilla of sound side, in which situation the skin was observed to be red and swollen; rigors, fever, tremors, jaundice, delirium, and great prostration of the vital powers, rapidly supervened, and he died of pyæmia poisoning, May 28th, 1864.

Case 51.—M. S. Sinclair, private, company "C," 36th Mississippi, aged 22, constitution good, occupation farmer; wounded May 27th, admitted May 29th, 1864.

History.—Gun-shot wound, ball entering right side about midway the sixth rib, and passing obliquely backwards, made its exit at the lower angle of the scapula. On admission patient very feeble from the loss of blood; wound healthy; ribs very little injured; great hemorrhage followed receipt of wound, but no hemoptysis. June 1st, patient arose from his bed without calling for assistance and immediately fell in a state of syncope, from which he could not be restored. He died in eight hours after the accident.

Remarks.—Profuse hemorrhage had probably occurred from the wound and discharged internally, although there was no external evidence of it.

Case 52.—P. F. Bryant, private, company "G," 28th Tennessee, aged 25, constitution feeble, occupation farmer; wounded June 18th, admitted June 19th, 1864.

History.—The following notes were furnished by the patient: "Resection of the metacarpal bone of the index finger and trapezium of right hand; fracture of right femur; ball lodged; health of patient bad when wounded."—C. B. Wilson, Surgeon 28th Tennessee. "This case was examined here (Marietta,) this morning. The femur is fractured near the trochanter, but not much comminuted. A portion of the ball was removed from medullary canal; more of it still remains, (as indicated by Nelaton's probe,) but could not be extracted. It is probable that a portion of the ball passed through the bone and lodged on inner side of thigh."—E. A. Fluellen, Surgeon, &c. On admission patient was very feeble, and continued to grow worse rapidly until his death on the following night.

Case 53.—Cyrus L. Nabors, sergeant company "F," 2d Arkansas, aged 29, constitution good, occupation farmer; wounded May 19th, admitted May 20th, 1864.

History.—Gun-shot wound by minie ball, which entered posteriorly two-and-a-half inches to the left of the spinal column, opposite the body of the fifth dorsal vertebrae, and passing obliquely forward, made its exit between the third and fourth ribs, at a point three inches to the left of the sternum. Alarming hemorrhage and hemoptysis followed the receipt of the injury. On admission patient was greatly debilitated from hemorrhage; there was neither cough, constitutional disturbance, nor hemoptysis; no pulse could be felt at the wrist in the radial artery of the effected side, nor in the brachial as far as the axilla. From admission this patient continued to do well without a single bad symptom. The arm on the wounded side was considerably atrophied and somewhat paralysed, due, doubtless, to the cutting off of the supply of blood and nervous influence. June 30th, doing well; furloughed home.

Remarks.—This case presents two points of deep interest: The first is that of an unquestionable wound through the lung without any symptom indicating that injury, except the original hemoptysis. The second was the undoubted severing of the left subclavian artery, as indicated by the absence of

pulsation in the radial or brachial artery, which was carefully and frequently sought for, and of the absence of which there could have been no mistake.

Case 54.—A. J. Chandler, lieutenant, company "G," 40th Georgia, aged 25, constitution moderate, occupation farmer; wounded May 26th, admitted May 29th, 1864.

History.—Gun-shot wound, ball entering the right leg at its middle third, and passing directly through from before, backwards, severely fracturing the tibia. On admission leg much swollen and very painful; wound discharging thin bloody fluid; surface around the wound covered with vesicles filled with serum and blood; general condition good.

Treatment.—Fracture box, aperients, cold water, and opiums. June 10th, very little change, except the wound has suppurated freely until now. Patient suffers from intermittent fever, to which he was subject before being wounded. This complication lasted several days in spite of all remedies for its relief. The wound in the mean time suppurated freely and the limb was very much swollen. A large ulcer, also, made its appearance on the under surface of the leg, which manifested a great disposition to slough and spread until it assumed a serious aspect. June 21st, the patient continuing to grow worse; amputation was performed at the knee joint through the condyles, leaving the patella. Patient sustained the operation well and for a few days progressed favorably. Sloughing of the stump has since set up, and at this time, (June 30th,) seriously complicates the case.

Case 55.—W. F. Phillips, private, 37th Georgia, company "F," aged 21, constitution good, occupation clerk; wounded June 19th, admitted June 20th, 1864.

History.—Shell wound, a fragment of same entering at the fifth metacarpal bone of the right hand, fracturing the same, as also the fourth, and passing out through the palm of the hand between the first and second metacarpal bones. On admission the hand was greatly tumified, with considerable constitutional disturbance. June 26th, patient had secondary hemorrhage about one pint; wound unhealthy and gangrene threatening hand and fore-arm. The arm was now amputated at its middle third by the circular method. June 30th, doing well.

ART. II.—Four Cases of Cerebro-Spinal Meningitis. Reported by P. GERVAIS ROBINSON, Surgeon P. A. C. S.

An article in the August number of the "Confederate States Medical and Surgical Journal," on Cerebro-Spinal Meningitis, by Surgeon G. A. Moses, of Mobile, Ala., has induced me to make a few remarks upon the same form of disease, which showed itself in the winter of '62-'63, in the command to which I was then attached, the Twenty-Second North Carolina regiment, encamped at Moss Neck, on the Rappahannock, six or seven miles below Fredericksburg. There occurred four cases in close succession, without apparent or appreciable cause, but it was a source of congratulation that this truly formidable malady was thus limited in its ravages. All the soldiers attacked were members of the

same company; three were conscripts and had been in camp but a short time, perhaps little more than a month, the fourth had served from the commencement of hostilities. Of the three conscripts two were brothers, and the third their brother-in-law. These all died of the disease, the veteran alone recovered. In the first case, the phenomena were few and very obscure, and not sufficient to lead to a just appreciation of its gravity. The patient complained on the first day of a dull constant headache, which was persistent and from which he could obtain no relief. His pulse was about eighty beats in the minute, and not perceptibly abnormal in calibre or force; his tongue presented no departure from a state of health, and the only other symptom beside the headache which indicated disease, was a constipated condition of the bowels. There was at no time delirium, and no variation in the size of the pupils. After the first twenty-four hours there was perhaps some disposition to drowsiness, from which, however, the patient was easily aroused. On the morning of the fifth day he became profoundly comatose, and died the same day. This case was obscure from its beginning to its termination; indeed, up to the third morning there was so little apparent cause of disease that I was inclined to regard the complaints of the patient with suspicion as to their honesty, and the case as one of malingering; I asked, however, the advice of a surgeon of the brigade of larger experience than myself, who concurred in my suspicions, but guided by the severe and persistent headache, I was induced to withhold such harsh judgment, and to treat the case as disease of the brain. I ordered a cathartic of oleum ricini et hyd. chl. mit., which produced no effect, when the oleum tiglii was used successfully. Cold applications to the head by means of wet cloths, with blisters to the nape of the neck and along the spine, completed the list of remedial agents, with no evident influence upon the course of the disease.

Autopsy a few hours after death revealed the true state of the case. On opening the calvarium, the "dura mater" appeared sufficiently healthy, but not so the membranes beneath. The surface of the brain was very much and generally injected, and there was a very extensive effusion between the "arachnoid" and "pia mater," with more condensed and coagulated patches, of a yellowish color here and there, and more especially along the longitudinal sinus of the cerebrum. Here and there these membranes were adherent, but could, with care, be separated with the handle of the scalpel. These deposits or exudations of lymph were found likewise about the base of the brain, and chiefly and in greatest quantity about the "medulla oblongata" and commencement of the cord. No effusion was found in the lateral ventricles, and the substance of the brain presented no appearance of having participated in the inflammation of its membranes.

This case is interesting and important as showing that there is no fixed or certain relation between the pathological condition of the diseased brain and the phenomena manifested, and that the most fatal form of cerebral affection can exist and progress to an unfavorable issue without creating more than a vague suspicion of its gravity.

On the same day that this soldier died, his brother complained of a dull and persistent headache, and in the evening became violently and suddenly delirious, raving and struggling to such a degree as to require the aid of three or four men to restrain him. In him the pulse was about ninety beats to the minute, full and strong, and the bowels closely constipated. By the use of cold water, poured over the head in considerable quantity, the more violent paroxysms were controlled, and by the steady application of wet cloths, in eighteen hours, his delirium subsided and reason was restored. The bowels were moved by the croton oil; and blisters applied to the nape of the neck and spine constituted the list of remedies used in this the first stage of the disease. From this time until about the end of the fifth day the disease appeared to be quiet and inactive, the patient being tranquil and quite rational, and partaking of such light nourishment as could be procured in camp. During this period of intermission, there were no very remarkable symptoms of disease, the pulse being almost quite normal, the tongue and skin presenting no very peculiar or characteristic conditions, and perhaps the only appreciable sign of any lesion of the brain was exhibited in the paralysis of the sensory root of the fifth pair of nerves, thus destroying the sensibility of the face. Towards the end of the fifth day the functions of the optic began to be interfered with, and vision became impaired, together with dilatation of the pupils. It was noticed, too, during this interval, that the sensibility of the "portio mollis" was much increased, the hearing unnaturally acute, and the patient's attention would be attracted by the slightest noise, and he would even remark upon what was said in a low tone at some distance from his bed. A part of this time he could not recognize a watch held at his nose nor feel a severe pinch of his cheek. From this he became much prostrated and sank into a state of collapse, and soon, profound coma supervening, in this condition he continued until about the seventh day of disease, when death, apparently dependent upon paralysis of the respiratory nerves, closed the scene.

The third case (this soldier being a brother by marriage of the two first) followed close upon the second and was ushered in with the like symptoms, firstly complaining of severe headache, succeeded by violent and maniacal delirium, requiring physical force to restrain his muscular efforts. Its course was very similar to that of the preceding throughout, except a variation in the paralysis apparent. In this the "portio mollis" was affected inversely, and the patient quite deaf after the third day. The delirium subsided as readily, and there was the same deceptive intermission in the march of the disease. In this case, however, this intermediate stage was more protracted, and that of collapse followed by coma came on about the sixth, and death about the ninth day of disease. The variation in the treatment of this case was in the administration of small doses of hyd. chl. mit., commenced as soon as practicable and continued until a gentle ptyalism was produced. In both, during the stage of intermission, the careful use of stimulants was deemed appropriate, and in the state of collapse with a liberality proportionate to the gravity of the indications. Stimulating enemata were

also tried in the last stage, but with no apparent influence.

The fourth case followed before the termination of the third, and its approach was marked by symptoms of cerebral disease similar to the last, viz: violent headache, succeeded by delirium, which was, however, more tractable, and did not partake of the raving madness of the two preceding. The delirium was subdued and the patient restored to reason in the course of thirty-six hours, and although the pain in the head continued for some days, there was no untoward symptom, and he gradually improved until, about the sixth or seventh day, convalescence was fairly established.

An autopsy of the second and third cases presented the same general appearances as the first, except that in these the limphy exudations were more extensive and there was much greater injection of the vessels of the membranes. In these, too, the lateral ventricles were filled to their greatest capacity with fluid. The brain pulp in neither case presented any appearance of inflammation. The accumulation of thick yellow lymph was greatest about the base of the brain, the commissure of the optic nerves, "medulla oblongata" and commencement of cord. In the first case the thoracic and abdominal viscera were examined and found healthy. These autopsies were all made in the presence of several surgeons, in order to insure a correct appreciation of the signs of lesion which were found.

This malady, occurring as it did suddenly and without apparent cause, and being limited to four cases by no circumstances or influences that could be appreciated, exhibited a malignancy second to none in the category of epidemic diseases.

On inquiry I found that cases had occurred analogous in character in various locations of the C. S. army, and likewise among the negro population on various plantations further south. In some there had been pulmonary, and in others complications partaking rather of the nature of catarrhal affections. In the cases here reported there had been no such complications, but during the same winter I had lost a case of what was considered "pneumonia," in which cerebral symptoms supervened after resolution of the lung had been well established, and from which the patient succumbed, exhausted by repeated paroxysms of convulsions. On reflection, it seems probable that this case was affected by the same malignant influences which caused the other cases here recorded.

I have been induced to report these cases in the hope that others who have had an experience of the same malady will not withhold their's from the profession, and thus we may possibly arrive at some data as to the conditions attending this deplorable disease, looking to a discovery of its causes and prevention, if not to its successful treatment.

Three of the cases here reported present the remarkable feature of having occurred in individuals so nearly connected by blood, being conscripts but a short time in camp, having undergone but little of the hardships of a soldier's life, living in the same hut and partaking of their food at a common mess.

It may reasonably be asked whether these circumstances

had not great influence in the extension, at least, of the disease; these soldiers being united by common sympathies and common interests, which established a physical and mental parallelism favorable to the invasion of the same morbid causes, and guiding them, thus introduced, in their progress in the same direction and to the like termination.

ART. III.—*The Value of Opium in Inflammation, especially when arising from severe Gun-shot wounds.* By JOEL HALL, P. A. C. S.

The history of this case may be uninteresting in other respects, except in a statistical point of view. The mortality which has hitherto attended penetrating wounds of the abdomen should prompt every observer to report the result of such cases, particularly noting the circumstances, symptoms, &c., of those cases terminating in recovery.

History.—Sergeant W. T. Price, company "H," 15th Tennessee regiment, aged 23, of good constitution and health, a farmer by occupation previous to entering the service, was wounded on the evening of November 1st, 1864, by the accidental discharge of an Enfield rifle, at very short range.—The ball entered the abdomen just below the sup. spin. proc. of right ilium, anterior to the bone, passing through transversely and escaping through the left inguinal region without injuring the bladder or intestines.

I reached the patient five minutes after receipt of injury, and introduced my finger into the wound to ascertain the extent of injury. After having satisfied myself that the cavity of the abdomen had been penetrated, a catheter was passed. A small quantity of urine issued, not exceeding two or three fluid ounces, which was not mingled with blood. Patient stated that he had voided urine a few minutes before. Anæmema of soap and water was next administered, which was soon cast off, showing no trace of intestinal injury. Shock very decided. Administered one fluid ounce of whiskey and one grain of opium. No hospital being near, placed him upon a litter and conveyed him to Tusculumbia, Ala., two miles distant, and placed him comfortably in bed. Applied a single dressing to the wound. Administered one grain of opium at 9 o'clock, P. M., and another at 3 o'clock, A. M.

November 2d.—Rested well last night. Pulse eighty this morning. Ordered half a grain of opium every three hours during the day. Six o'clock, P. M., no change. Ordered one grain of opium to be given at 9 o'clock, and another a 4 o'clock, A. M. Voided urine late this evening. Bowels quiet.

November 3d.—Slept well. Bowels still quiet. No tympanites existing. Voided urine without difficulty this morning. Pulse eighty-five. Treatment continued.

November 4th.—Bowels have not moved yet. Pulse ninety. No symptoms indicating extensive peritonitis. Wound beginning to suppurate slightly. Ordered a little rice water and continuation of treatment.

November 5th.—Slept well last night. Pulse eighty-five this morning. Voided urine during the night. In other

respects, same as yesterday. Ordered half a grain of opium every four hours during the day.

November 6th.—No change. Treatment continued.

November 7th.—Rest well last night. Bowels a little flatulent. Pulse eighty-five. Appetite good. Ordered an ounce of boiled sweet milk every six hours; half a grain of opium every five hours during the day; cold water dressing to wounds, which has been kept up from the beginning.

November 8th.—Same as yesterday. Treatment continued.

November 9th.—Pulse eighty. Appetite good. In other respects, no change.

November 10th.—Bowels moved twice last night. Pulse seventy-five. Appetite good. Patient doing well. Diet improved. Treatment continued.

November 11th.—Wound suppurating freely. Pulse seventy-five. Appetite continues good. Bowels moved once in last twenty-four hours. Ordered half a grain of opium every six hours. Wound to be dressed as heretofore and kept clean.

November 12th.—No change.

November 13th.—Improving rapidly. Opium to be discontinued, except to procure sleep at night.

Here my notes cease. The corps moved from Tuscumbia across the Tennessee river, to Florence, and the patient was placed in charge of a local physician. Although the case has not yet recovered, I feel that nothing is hazarded in expressing the belief that he will soon be well. Whatever is known of the future result of the case, will be borne upon the monthly report of "Surgical Cases."

ART. IV.—*Femoral Artery Severed and not Ligated.* Reported by Assistant Surgeon A. C. Fox.

Captain A. W. Ledbetter, company "K," 9th Alabama regiment, infantry, a native of Alabama, occupation farmer, general health, prior to the war, good, was wounded near Petersburg, Va., June 29th, 1864, and admitted into hospital July 1st, 1864. Minie ball entered the left thigh at its middle third, on the inner aspect of the limb below the os femoris, ranging upward and outward, severing the femoral artery in its course, was extracted at a point about one-half an inch below the acetabulum. Upon reception of the injury there was considerable hemorrhage, which was controlled by a temporary tourniquet, consisting of a handkerchief drawn tightly around the limb at its upper third. When admitted no pulsation could be detected below the wound. Temperature of the wound natural, except in the toes. Pulse 120; appetite good; cheerful and free from pain. The limb having been encased in cotton and placed in an easy position, cold water dressing was applied to the wound and absolute rest enjoined, at the same time half grain of sulphate morphine was administered to promote sleep.

July 2d.—Rest well during the night; pulse less frequent; skin moist, and no unpleasant symptoms.

The patient was put upon good diet and continued doing well. On the 14th July, pulsation was discovered in both the popliteal and tibial arteries. No unpleasant symptoms supervening, the patient was furloughed on the 30th July, 1864.

G. S. Medical & Surgical Journal.

RICHMOND, FEBRUARY, 1865.

E. W. AYRES.....PUBLISHER AND PROPRIETOR.

EDITORIAL AND MISCELLANEOUS.

The Medical Profession.

A late number of the "Saturday Review," contains an article from which the following passages are taken: "Medicine and its professors have long held sway over the hopes and fears of mankind. The science officially taught in universities and lecture-rooms, has over and over again been forced to alter its fundamental principles and its outward practice; yet one-half of mankind has continued to look up with unswerving confidence to the authority of the faculty, while the other half has been ever ready to run after the new sectaries who constantly arise to question the doctrine of the schools, and to propound some new remedy for human suffering. * * * * The plain truth is, that people have followed quacks because they have not found in the doctrines or the practice of the regular profession reasonable ground for confidence. * * * * If bleeding, calomel, starving, stimulants, warm rooms, open windows, have each been tried in turn, and, as it seems, without any marked advantage one over the other in effecting cures, it was not surprising that skeptics should doubt the inspiration of the oracle whose utterances were found to be so changing. * * * * The doctor, often uncertain of the nature of your disease, was quite ignorant of the cause of it. He had no evidence as to the action of his drug, or even whether it acted at all upon the cause of disease; and lastly, he had no evidence that the drug would effect you in the same manner as others who had taken it. The very utmost that he could urge was a belief, more or less probable, that the same drug had been serviceable in cases presumed to be similar. * * * * If science should hereafter gain further insight into the causes of disturbance and the process of restoration, the physician may perchance play a more leading and influential part. As it is, he fills a secondary place, and if he succeeds in averting fresh cause of mischief and in clearing the way for the curative process which is itself beyond his control, he has fully performed his part."

Carlyle, who notwithstanding his singularities, has done more than any living writer to expose "shams," does honor to the truly great, and excites men to do real work, in his remarkable Latter-day Pamphlet on the "Stump Orator," speaks

thus of medicine as a profession: "Medicine—guarded too by preliminary impediments and frightful Medusa-heads of quackery, which deter many generous souls from entering, is of the half-articulate professions, and does not much invite the ardent kinds of ambition. The intellect required for medicine might be wholly human, and, indeed, should by all rules be; the profession of Human Healer being radically a sacred one, and connected with the highest priesthoods, or, rather, being itself the outcome and acme of all priesthoods, and divinest conquests of intellects here below. As will appear one day, when men take off their old monastic and ecclesiastic spectacles, and look with eyes again! In essence, the physician's task is always heroic, eminently human; but in practice, most unluckily at present, we find it, too, become in good part beaverish, yielding a money result alone. And what of it is not beaverish,—does not that, too, go mainly to ingenious talking, publishing of yourself; a partly human exercise or waste of intellect, and alas! a partly vulpine ditto? Making the once sacred iatros, or Human Healer, more impossible for us than ever."

Dr. Sibson, F. R. S., President of the Medical Society of London, in his address before the Society, alluding to these passages, remarks: "It is true that our profession does not hold that high and influential position in the eyes of the public that it did formerly. Quackery has at all times been resorted to by many; but it has never been so organized and so much in vogue as now."

"When we find two such able writers and dispassionate men as Mr. Carlyle and the author of the above article in the "Saturday Review," speak of our profession as they do, and that many retired, educated persons, desert the profession and fly to quackery, we are impelled to inquire into the causes of this state of things."

"I shall say a few words first as to the causes which are due to the medical profession itself, and then as to those which may be laid to the charge of the public."

"Amongst causes due to the medical profession itself, may be named the former trust in a great number of medicines, and as a result, their over-use, sometimes to the exclusion of the more important means—diet and regimen; the frequent changes of treatment; the undoubted revolution from a lowering to a sustaining line of practice; the frequent failures of diagnosis evidenced in cases of criminal exposure; the differences of opinion of medical men, often even of those of the most deserved eminence, as expressed in the law courts and before commissioners of lunacy; the occasional habit of one medical man speaking against another to a patient; the practice, unfortunately sanctioned by custom, of the two frequent advertising of medical works in the newspapers; the frequent announcement of new medicines and new plans of treatment, although they have been insufficiently tested; the remarkable general tendency to abandon the old methods of treatment, though based upon practice and observation, and to run after new ones; the unprofessional custom, on the part of one or two medical men, of advertising secret nostrums; the publication of the advertisements of such nostrums in the medical

journals, and the common employment of such secret drugs by the profession."

"But while these causes on the part of the profession itself have tended to lower the public estimate of medicine, a far more important series of causes have operated with the public from their own errors. They have habitually expected too much from the medical man. They see judges give erroneous charges and judgments both as to the facts of the case and the law itself; they see the decision of one judge upset by a bench of judges; they see politicians honestly holding the most different opinions with regard to public affairs; they see financiers and economists, both political and social, arriving, after careful study, at opposite conclusions; they find teachers differ in the mode of training the young; and yet, in none of these instances do the public, for a moment, think of reproaching these men—many of them of the highest eminence, the greatest ability, the most perfect integrity."

"Again, in all the sciences, while the great body of opinion is fixed as to the main points, most of the new discoveries and advances are causes of dispute between the most distinguished men of science, and proofs that those eminent men held erroneous views until they were corrected by recent researches; and yet who ever thinks of blaming men of science for the exposure of old errors, or for their differences of opinion? Nay, who does not join in admiration of the unsparing search after truth, which animates this band of fellow-workers? And yet, this freedom from censure which is accorded to the judge when in error, to the statesman, the economist, and the man of science, when they differ from each other in opinion, bring to light new discoveries and root out old errors, is denied by the public to the profession of medicine. And yet how infinitely more difficult is our pursuit than theirs! They are concerned, on the one hand, with more human affairs, patent facts, definite laws, established principles; on the other hand, with single science—limited to one single branch of inquiry, relating generally to inanimate matter, capable of the most penetrating research. But our science embraces all other sciences—it is the knowledge of the highest, the almost inscrutable laws—the divine laws of life itself, with all their marvellous contexture, their complex intricacy, their myriads of parts, and yet their perfect unity. The all weaves itself into the whole; the one works and lives in the other."

"And this applies to the life—the functions of man in health. Let disease seize him, and then how is all that complex harmony rendered still further complex! That difficult machinery deranged; how is the medical man to know with constant precision the seat of the derangement, and the mode of putting it right? And yet if he fail either in the knowledge of disease, or the power of treating it, he is immediately condemned by the public, who are so indulgent to all others. The public, as I said at the opening of the argument, expect from us too much. And why do they do so? Because they are ignorant of the merest rudiments of physiology. But the majority of the public not only distrust the medical profession, who devote themselves with their whole energy to the pursuit of the most difficult of sciences, but they rush into

the organized quackery of the day with the most implicit trust. Why is this? It is that they are not only ignorant of physiology, but of the knowledge also of the nature of things, of the great laws of nature, of the necessary chain of cause and effect. They do not feel and know that for any given effect to be produced an adequate cause must be employed. And thus they trust even in the twenty-third dilution of the homœopath—a dilution that, if it were applied to the earth, the sun, and the whole solar system of planets—if these orbs were all broken up and diluted by divisions of a hundred at a time to the twenty-third homœopathic dilution—and if that dilution were placed under the highest power of the microscope, it would be actually invisible!

“Unfortunately this ignorance of physiology and of the knowledge of the nature of things is not limited to the uneducated public; it extends to those who have received a high classical education. It thus applies to some of the highest aristocracy, and to some also of the clergy, who are generally themselves the teachers. If such be the teachers, what must be the knowledge of the taught?”

“Another great error on the part of the public is their estimate that our sole function is the giving of drugs; whereas now, as always, though now more than ever, diet, the management of the sick room, the pursuits of life, the mental habits, change of air and scene, exercise, and all that is comprised under regimen and hygiene, are really more effectual and more employed by us than the giving of drugs. Even the “Saturday Review” speaks only of the administering of medicines.

“There are other causes of the popular estimate of our profession due to the errors of the public, but into these I shall not farther inquire, but will attempt to answer very briefly the question: Is our profession worthy of this distrust? If the noble rolls of great dead ones are opened, a long procession of names is brought to view, who, by their high devotion, clear intellect, and searching and laborious pursuit of truth, from the days of Hippocrates to those of Hunter and Laennec, have extended and expanded our knowledge of the laws of life in health and disease, and our power of aiding nature in the restoration of health to those who are suffering from disease. And of those great men, during the last two hundred years, England can claim many of the greatest. Harvey, Sydenham and Hunter enjoy the highest places in all countries.

“But it may be said, these are your great dead, but where are the living illustrious ones? The answer is, that never since the laws of life in health and disease were studied have there been so many earnest inquiries as in our time, whether here, in Germany, France, or even America. Never has the science of medicine, in all its departments, advanced so much as it has done of late years. Our science has every year been becoming more and more of a fixed science. The cross-lights from all other sciences have been brought to our aid, and we can truly say that many of the most important laws of life, both in health and disease, and principles of the treatment of disease, have been searched out, and are now established, so

that we have a true standing ground from which future solid advance may take place.

“Animated by the spirit of our great founders, and joining in the earnest pursuit of truth, with a view to the advancement of our truly and eminently human profession, we shall live down calumny, and shall be doing our part towards placing our profession in a higher position than it has ever yet held in the estimation of the public.”

Congress of Geneva.

Official announcement is now made of the articles agreed upon by the representatives of Belgium, Baden, Denmark, Spain, France, Hesse, Italy, the Netherlands, Portugal, Prussia, Switzerland, and Wurtemberg. The object is one which the members of our profession have often prominently advocated, and which enlightened statesmen have approved. Talleyrand lays down as a principle which should be adopted by civilized nations, the maxim—that nations should do to each other in peace the greatest possible amount of good, and in war the least possible amount of harm. The immediate impulse for the Congress was given by M. Henri Dunant, of Geneva, in his book entitled “A Souvenir of Solferino.” He had been present as a simple spectator on that 24th day of July, 1859, when more than three hundred thousand men were engaged in combat, when the line-of-battle extended to more than fifteen miles, and the fight lasted more than fifteen hours. He saw, also, during the following days, the sufferings and the privations of the wounded lying on the field or hurried into improvised hospitals, devoured no longer by fire and sword, but hopeless, and dying from being abandoned, from want of ready, sufficient and efficacious help, and from the diseases born of hospitals. He proclaimed anew the conviction that the wounded man on the ground, of whatever nation, is sacred; that humanity is international; and that medical officers in attendance upon the sick and wounded, their assistants, and the stores consecrated to the service of the invalid should be respected. (It will be remembered that when the Confederate army entered Winchester, the Union Hotel Hospital, with its surgeons and assistants (eight) its attendants, nurses, and inmates, all fell into the hands of General Stonewall Jackson, as prisoners of war. So far from destroying the hospital, he directed Brigade-Surgeon Peale to continue in charge, and was informed that all the Federal sick and wounded would be placed under his care. Surgeon Peale accepted the position, and the labors of the hospital were, as before the capture, performed with devotion and skill. The Confederate general went a step further, and presented an example which is not only worthy of record, but also of imitation by the whole civilized world, in warfare. The surgeons and assistant-surgeons were “unconditionally released” upon their “parole of honor,” “to report in person, singly or collectively, to the Secretary of War at Washington as such,” at the same time pledging themselves to use their “best efforts that the same number of medical officers of the Confederate States army, now prisoners, or who may be hereafter taken, be released on the same terms, and “to have this principle established”—viz: “the unconditional release of all medical officers taken prisoners of war hereafter.”—[Ed.]) Encouraged by the favorable reception of his declared convictions, M. Dunant addressed to the War Ministers of nearly all the States of Europe a proposition to send official delegates to Geneva to consider these propositions. Fourteen Governments complied, and, after four days’ consultation, their representatives adopted a programme demanding neutralization, during war by bellig-

erant nations, of ambulances and hospitals, of their staff and material; and a common flag and badge for those engaged in the charitable work. M. Dunant, M. Moynier and General Dupin, with others, continued to labor at the practical realization of these objects. Committees were established in the various kingdoms. Commissioners were dispatched to observe the course of events during the war in Schleswig-Holstein, and to ascertain how far voluntary efforts may be made available in mitigating the horrors of war, without interfering with the efficiency of military operations. For a great part of the conception of the authors of this congress is to provide for the organization and official reception of such voluntary charitable corps in time of war. Subsequently they supplicated the Swiss Government, as a neutral Power, to take the initiative in inviting all the sovereign Powers to concert stipulations, which may be introduced into the law of nations, as to the character of the wounded and of those who bring them succor. This invitation has been generally accepted, and has resulted in the important congress from which the present bases of a convention have issued. It is a great work to have sprung so rapidly from the initiative of a few private individuals; and the names of its authors will deserve to be consecrated in the roll of the highest benefactors of our own and future times.

DYSPEPSIA.—A Frenchman describes dyspepsia as "The Remorse of a Guilty Stomach."

Surgeon-General of the Federal Army.

Dr. HAMMOND, the late Surgeon-General of the Federal Army, has been cashiered, and declared incapable of serving again in any public capacity. The report of the Judge Advocate-General sets forth the findings of the Court Martial, the proceedings of which occupied many weeks. They are to the effect that the accused ordered the purveyors to purchase supplies of inferior quality, well knowing them to be such, and to purchase articles at exorbitant prices, with corrupt intent to aid in defrauding the Government, and that he ordered the purchase of "additional large supplies," "corruptly," and "with intent to aid" certain persons "fraudulently to realize large gains thereon." They convict him of official corruption, abuse of power, and a gross breach of public trust. The Court, which was composed of nine general officers, after an investigation of nearly four months, declared him guilty of the charges preferred, and awarded the punishment which, in their judgement, was in accordance with the nature and degree of the offences committed; and a careful examination of the record, says the Judge Advocate-General, leaves no room for doubt as to the validity of the proceedings, or the justness of the findings and sentence.

The following is the order of the President confirming the sentence in this case:

"The record, proceedings, findings and sentence of the Court in the foregoing case are approved; and it is ordered that Brigadier-General William A. Hammond, Surgeon-General of the United States Army, be dismissed the service, and be forever disqualified from holding any office of honor, profit or trust under the Government of the United States.

"A. LINCOLN.

"August 18th, 1864."

Dr. Hammond has written to the "New York Herald" a letter on the subject, of which the following is a copy:

"WASHINGTON, D. C., Aug. 22, 1864."

"The undersigned has read in the 'Sunday Morning Chronicle' of this city the remarks of Judge Advocate-General Holt on the proceedings of the Court Martial in his case. He learns from this review, and from the order of the President appended, that he has been dismissed the army, and prohibited from ever holding office under the United States.

"The undersigned has no idea that he will lose one friend by this action of the Administration; but his good name is valuable to him, not only as regards those who know him, but those who do not.

"So soon, therefore, as he is furnished with a copy and findings and sentence of the Court, he will present to the public a brief history of the facts leading to his arrest and trial, a review of the record in his case, and some commentaries on the report of the Judge Advocate-General. With these he will be content to submit to the judgement of the world as to how far he has been guilty of the offences charged, and how far he has been the victim of conspiracy, false swearing and a malignant abuse of official power.

"WILLIAM A. HAMMOND."

OBITUARIES.

Professor James H. Conway.

We record, with feelings of profound regret, the untimely death of James H. Conway, M. D., Professor of Obstetrics and Diseases of Women and Children in the Medical College of Virginia, and one of the most eminent physicians of Richmond.

Friendship finds an easy task in rehearsing the many admirable qualities of head and heart which characterized this gentleman. Endowed by nature with a good intellect, an attractive person, and a sweet and genial temper, he was likewise remarkable for peculiar graces of manner and carriage which combined to render him an universal favorite, and gave him a circle of friends and admirers who showered on his path through life their favors and good offices.

Thus gifted by nature and education, success in his profession was the necessary consequence, and constant study and observation only aided his rapid progress to the higher ranks of his chosen calling. Hence, when quite young, he was a lecturer on obstetrics in the summer session of the Medical College of Virginia, and on the death of Professor Bohannon he was appointed to his vacant chair, where he exhibited a close and careful knowledge of its important requirements, which rendered him a most useful and industrious instructor.

His death at an early age—ere he had reached his period of greatest usefulness, has deprived the medical circle of Richmond of one of its chief ornaments. Society mourns his loss, and he leaves not an enemy behind.

veniences in cupping to a large amount in this situation.— You are obliged to cut deep to obtain a good flow, and deep cannot be stopped easily, but go on oozing unperceived into the poultice which, as I will instruct you presently, is to be put round the chest.

Remember that in letting blood you are wielding a dangerous weapon. While from a mechanical point of view nothing can equal the aid it gives, at the same time its more remote or physiological action is hurtful. The shrewd comedian tells us, "*necesse est facere sumptum, si queris lucrum*;" so that if you have gained the inestimable boon of a restoration of balance in the circulation, and a consequent relief of dyspnoea and an arrest of the progress of death in the lungs, you must not complain if some evils attend the process. The mere loss of so much "liquid flesh" is in itself an evil, but a minor one; of greater import is the increased proportion of effete fibrine and water which it induces, the diminution of red globules, and the consequently diminished power to bear up against the destruction, however temporary, of so much pulmonary substance.

Judge, therefore, of the necessity of this treatment by the balance between the heart and the arteries. If the apex of the former organ strikes strong while the pulse at the wrist is defective, act freely and confidentially. If, on the contrary, the ventricles are weak while the pulse is full, large, and rapping, be cautious in what you do, and if you draw blood at all, let it be by cupping the chest.

You will find in some lectures on medicine rules about bloodletting in pneumonia attempted to be deduced from the supposed degree of consolidation of the pulmonary tissue. These rules are singularly foolish and inapplicable to practice. They say you should bleed so long as you know that the lung is in its first stage of consolidation, (*i. e.* congestion,) as indicated by fine crepitation and incomplete dulness; and that you should not bleed after it has once become so completely consolidated as to admit no air in the finer bronchi—a state declared by the sound of coarse crepitation and complete dulness. Such a rule is quite useless at the bedside, and will often prevent your employing active practice in cases where it is urgently required. In the first place, in a majority of cases fine crepitation is marked by the mixture of coarse, produced by the presence of catarrhal mucus in the large bronchi, especially in the catarrhal pneumonia of young persons. If you wait till you can hear distinctly fine crepitation, you will wait too long. Then, again, the dulness of congestion is not necessarily incomplete, as you may satisfy yourself by examining a case of transitory congestion in continual fever, which is often very absolute, though it is so transitory that a mere change of position may remove it in twenty-four hours. Then, again, a slight collection of serum in the pleura make the lower lobe dull at the very commencement of pneumonia, and prevent your bleeding, at a very early stage, if you were to follow the rule I quoted. But the most truly important consideration and the most serious objection to the rule is, that you may have all stages of partial-tissue death going on at the same time; one lobe, or one part of a lobe, may have advanced even to yellow hepatization, while another part is entering into red hepatization, and in a condition which most would agree is that capable of benefit from letting blood. Your best guide to the necessity will be the dyspnoea, and your

best check, the balance of the heart and arteries, as I have explained already.

Remember now what I told you about bleeding in a former lecture on "Anæmia and Bloodletting"—*be careful to supply material in the place of that which you are taking away.*— Let the patient be fed with beef-tea or milk every two hours, just as if he had typhoid fever. I mention this part of the treatment next to the bleeding to remind you of the close connection which there is between the two, and because of the immense importance of it to your success, whether you elect to bleed or not.

I now come to a direct restorative, about the use of which at all times you need have no manner of hesitation. You can always, without any exception of age, sex, condition, cause, or complication, follow a treatment to which I attribute more power of saving the lives of pneumonic patients than to any other, and which you see me apply in all cases; I mean the enveloping the chest in a large bath-like poultice. The action of warmth and moisture on animal tissues tends directly to increase their vitality. You may see with the naked eye a healthy surface of skin under their application renew its life; it empties itself quicker of its pale, livid, venous blood, and glows with a fresh access of the bright arterial stream; it swells up elastically with fresh juices; it is more delicately sensitive when used for the purposes of touch; at the same time it feels no pain, but, on the contrary, an exquisitely pleasurable calm. You cannot see this renewal of life in internal organs; but you may infer that what takes place in one tissue takes place also in another with modifications dependent on distance and other difficulties of application. And you may infer it also from the results; for you find the dyspnoea diminished, the breath being easier drawn in spite of the weight of the poultice; the hot, fevered skin becomes moist and active, and soon the ribs begin to move again and air is re-admitted into the previously paralyzed lung-tissue. These effects are the most strikingly shown in the case of infants, whose thin chest-walls are rapidly and efficiently permeated by the influences of the poultice, and in whom also this remedy is the only one really safe and invariably necessary. I cannot speak too strongly of the importance of your adopting it, and letting all other treatment be rather rejected than this directly restorative agent.

The poultice is best made of bruised meal, because that keeps moistest. It should be spread half an inch thick at least, on a cloth or flannel, as broad as the circumference of the thorax. If any portion of the upper lobes is inflamed it is essential, and even if only the lower lobes are inflamed it is prudent, that it should be deep enough to cover the whole chest from the collar bones to the hypochondria. Lay the patient on it on his back, and fold it across the front until it meets. In adults it will usually keep in its place of its own accord; but in children it is needful to have a tape stitched on in front and a tape behind, which you tie over the shoulder in the manner of a shoulder strap, otherwise the little prisoners wriggle out of their soft breastplates. When once you have got it *in situ*, keep it there, and never let it be taken off till another hot one is ready to go on.

In low fever the continuous poultice somewhat stands in the way of the cool sponging. But, in practice, this last important part of the treatment becomes less necessary at the period when congestion and pneumonia occur; the skin has then become cooler

and more active. Besides, the poultice often takes its place by softening and suffusing, with a gentle perspiration, the whole body. I have often had pneumonic patients complain of the way in which it makes them sweat.

Alcohol, especially in the form of port wine, is very useful in treating pneumonia. Even in hearty, temperate persons, when you are going to bleed it is desirable to give a little, as was done in case 1. A glass of hot negus before the operation makes it safe; and whenever you observe the nervous system prostrated by the extent of the disease, so as to produce tremor of the hands, quivering of the tongue, delirium, dry brown tongue or a tendency thereto, throw in a little wine from time to time. In old persons, especially in the upper classes, who have been used to good living, and in persons of all ages who have indulged too freely in alcoholic liquids (like case 2) you need not wait for any symptoms as above described, but begin with wine immediately. In children it is not required, and they get well quicker without it.

In the pneumonia of typhoid fever, position is of great importance. As long as the walls of bloodvessels retain their natural elasticity, they are able to resist the gravitating force which acts, of course, on the blood as on all matter; but when their life is lowered in disease, the elasticity is the first vital property which suffers, and the blood then gravitates towards the lowest part of the viscus. This is especially the case in typhoid fever. Lay the patient, therefore, on the side opposite to that affected (as was done in No. 3,) or even on his face for a time, if both are affected; and thus the very force of gravitation, which you feared as an enemy, becomes a friend, by withdrawing the congestion from the weaker point. This boy was cupped on the side. You need not be afraid of a small loss of blood in typhoid fever, where an important viscus requires it. A large portion of the vital fluid you take away is poisoned and dead already, and unfit for the purposes of life; so that you are not robbing the patient to the full extent of the quantity drawn. You saw this lad was much more lively after his cupping than before. It is better to draw it locally than generally, because local benefit is expected from it and not general.

I always abstain from purgatives in pneumonia. My reason is, because I have observed that patients who have diarrhoea at the same time generally do very badly; and if natural diarrhoea does harm, I infer that artificial diarrhoea does harm also. I prefer to produce constipation by opiates, where it does not already exist. If the rectum gets blocked up with faeces, it is easy to wash it out with warm gruel.

Blisters, also, have seemed to me to do harm in a few cases where I have seen them employed before the patient came under my treatment. It is usually non-medical persons who put them on, under the general idea that they are good for a cough, with pain in the chest.

Nothing has been said about antimony and mercury, drugs formerly much used in pneumonia. They are destructives, and I cannot see that there is anything to be destroyed in this disease, or that there is anything whose destruction would aid the employment of direct restorative treatment. When I used them, I was frequently obliged to leave them off on account of the bad symptoms attributable to their agency, and I always felt doubtful if success in prosperous cases could be traced to them. But in all diseases which have been under treatment before yours, pray never let a word escape from your lips, or a thought dwell upon your minds, about the patient being worse for the means previously employed. Most probably the harm done even by the most unsuitable drug is inappreciable; for a sick man is a tougher animal than we often give him credit for, and will stand a vast deal of

faulty physic, and it can hardly be but what some of the treatment has added to his chances of life more than if he had been let alone. Besides we are all infinitely fallible, God knows, and it is not for us to judge of circumstances we had not seen.

The first case of pleurisy is that of a day laborer, aged twenty-nine. He complained of a sharp pain on both sides of the waist, which he said had been coming on two days, and was getting worse. On examination, I found a pleuritic friction-sound beneath both scapulae and in the lateral regions, but the normal respiratory murmur was still to be heard in spite of it. The friction-sound was a leathery creak, lasting through the whole of inspiration and the latter part of expiration. The tongue was furred, and there was thirst. He was ordered to be cupped, but as the instruments had unfortunately gone to be mended, and would not return for an hour or two, a dozen leeches were applied along the lower edges of the ribs in the infra-scapular region. Immediately they came off, a large poultice was placed all over the chest. The next day the pain and fever were quite gone, the friction-sound was heard over only a limited space, and on the next day had departed altogether.

Pure fibrinous inflammation of the pleura, usually called pleurisy, without any affection of the pulmonary tissue, you do not often have an opportunity of seeing in the hospital wards. But you know, from your experience of post-mortem examinations, how common it must be. There are few even of the most healthy chests in which you do not see old adhesions of the pleuritic surfaces, the relics of pleurisy—sometimes in one part, sometimes in another—sometimes partial, sometimes universal—but so common that they were supposed to be the normal condition of the part when morbid anatomy first began to be studied. What is the reason, then, that you have so few opportunities of learning how to treat this disease while you are in *statu pupillari*? Simply because it is scarcely ever so severe as to bring the patient into our hospital wards, so that your only chance of observing it is when it is joined with some more alarming disorder.

Ninety-nine times out of a hundred pure pleurisy begins and ends with a catching pain in the side on inspiration, and a slight inflammatory fever, making the patient coddle at home and take slops, but not employ a doctor. It would, however, be much better for him if he did, for sometimes the illness may turn out to be a more serious affair; and always the pain in the side and the fever may be shortened by good management and lengthened by bad.

For example: blisters at the commencement of a pleurisy invariably protract the duration of the inflammation, and make it more severe. The property of caustics is to cause and augment that very fibrinous state from which the membrane is already suffering. Exposure to cold, and to changes of temperature by baths and the like, make it worse, as do strained positions of the body and exercise. Opiates also cover up the evil with an anæsthetic mask, and prevent the patient knowing how he really is. Mercury, again, is an unnecessary call upon the whole system to make destructive sacrifices for the sake of a very small and not important member. Purgatives do no good, and expose the patient to catch cold at the water-closet.

On the other hand, the treatment you saw applied gives decided and immediate relief, and prevents the danger of the disease continuing. This treatment of the application of leeches and the poultice is what I design to call your attention especially to.

The object of leeching and all local blood-letting is to relieve that inflammatory congestion which is not only in itself an evidence of loss of vital power in the local blood-vessels, but is also

the cause of further loss of vital power by leading to the other steps of the inflammatory process. The blood-vessels are unable to employ themselves with their usual elasticity, so you roughly take the place of vital power and empty them artificially. You may perhaps say that is all very well in external inflammations, when you can directly draw off the blood which is causing the "rubor" and "tumor" visible to the naked eye, but you may doubt how the pleura, especially the pulmonary pleura, is to be effected by depleting the capillaries of the skin. It is such a long way round before you can find any vascular connection between the parts that you may suggest that local blood-letting is only beneficial by detracting so much blood, and that a small venesection would be more convenient, and equally effectual. Now, it is not at all necessary to have a vascular connection between separate parts for altered states and conditions of life to be propagated from one to another. I have seen in the dead body a round, circumscribed spot of costal pleura affected with fibrinous inflammation, and this had spread, not to the adjoining surface of serous membrane—not to that tissue intimately one with it in vascular connection—but to the opposite surface of the lung, between which and its substance lay the great gulf of the pleural cavity—the great gulf, anatomically speaking, but not physically, as proved by this instance. Now, if this gulf can be spanned by disease—the negation, the deficiency of life—shall it not be yet easier stepped across by the remedy, the renewer of life? I do not myself feel any hesitation in believing firmly what experience seems to teach, that, in inflammations of serous sacs, depletion applied to the external surface has a power proportionate, not to the quantity of blood taken, but to the locality.

I have called the local detraction of blood a "renewer of life," and I think it is but fair to explain in what meaning I so speak of it. Doubtless the taking away the vital fluid is taking away part of the body, and so is directly a destructive agent. But then blood thus lost from an inflamed part is not all loss; it is black, "melanosed," partially dead, and unfitted for the purposes of life, and only a portion of it can really be called living. Then, again, granting that loss of blood is a direct loss to a living body, still the indirect gain is a full compensation to cases when it is rightfully applied. The blood-vessels resume their elastic force, the blood stream is restored, and loss of substance is a regaining of function; so that a destructive becomes, in the end, a constructive remedy.

In the action of poultices there is no even seeming paradox to stumble at. Continuous steady warmth is the most direct agent we have for vital development. It not only encourages vital growth, but makes that growth take a higher form of life. Mr. Higginbotham found that different detachments of tadpoles, kept in the dark, and treated with different degrees of temperature, threw off their tails and branchiæ, and developed lungs and became frogs with a quickness exactly proportioned to the warmth they were subjected to. Warmth, especially when kept steady and even by moisture joined with it, has the same effect on the failing life of tissues in the higher animals. It raises and restores it to its normal force of development. It renews the injured membrane, which had been lowered to that condition we call congestion or inflammation, into the higher life of warm-blooded circulation. As it developed the tadpole into the frog, so it develops the half-killed diseased part into full life.

But you must take care not to follow up the application of invigorating warmth by the depressing influence of cold, or it becomes doubly depressing by contract. Your poultice must be kept on hot, and hot till all pain is gone, and the breath can be

drawn quite freely and easily. And it will do no harm to induce your patient to retain it warm a little longer, as was done in this case. Such means will not fail to cut short an attack of pure pleurisy.

But you will say there are cases of pleurisy which are *not* cut short; and notably just now there is one, a few beds off the last patient, whose case I will extract from the case-book:

John C., aged thirty-four, navigator, always enjoyed good health until six months ago, when, on the third day after lying in a damp bed, he was seized with a violent, sudden pain in the right side, which obliged him to take to his bed. He was in bed a fortnight, and was treated with mustard plasters. He coughed up a good deal of frothy sputa, and was a little delirious several nights. The pain then left the right side and settled in the left, but did not prevent his getting to work again a month after the first attack. His work has not been hard, and he has continued at it, with an occasional day's exception, till he was admitted. The principal trouble he has had, and the cause of his being off work sometimes, has been dyspnoea. He has pain on bending forward and on drawing a deep breath.

On examination of the chest in a sitting posture, there is very absolute dulness of the lower half of the lateral and scapular and of the whole infra-scapular region on the left side. The rest of the thorax is resonant. When he lies on his belly and puts his shoulders below the level of the chest, hanging his arms and head down, this infra-scapular region becomes more but not quite resonant, showing that the course of the dulness is, in part at least, due to fluid which moves about by the force of gravity. Still some dulness remains, and there is a whiffling sound with inspiration and expiration; and in the lateral region the dulness remains unaltered by any position.

The pathological history of the case appears to me this: that the man was attacked with double pleurisy, worse apparently on the right side than the left; that the treatment relieved it; but that the left side being the least attended to, the inflammation spread to the pulmonary tissue, and caused its insidious condensation. The cause of the dulness on percussion is partly fluid, which is affected by gravitation—partly solidified lung, which is not so altered in its position. The fluid in the pleura and the condensed pulmonary tissue have mutually kept one another from being restored to life.

Such is the most ordinary cause of long cases of pleurisy made chronic. The longer they have lasted, usually the more obstinate they are in yielding.

As respects the treatment, you will find on the card the following, which may be considered as the "*processus integer*," as Sydenham calls it, of such cases:—Empl. cantharides (pollices) lateri; Misturæ potassæ nitratis, one ounce; Tinctæ ferri sesquichloridi, fifteen drops, ter die; Pilulæ hydrargyri, scillæ, pulveris digitalis, each one and a-half grain; omni nocta et mane.

You will observe that the drugging is a union of destruction and construction, so as to try and alter as far as possible the whole habit of the system—to cause by destruction a demand for new material, the supply of which is guaranteed by the iron. The mercury causes a general increase of metamorphosis, the waste from which is directed to the kidneys by the squill and nitre. The digitalis tends to relieve congestion by increasing the activity and tone of the blood-stream. So that by a union of virtues, the combination prescribed in the pills will rarely fail to prove a powerful diuretic. The blister which has been put on the side will probably have to be repeated once, and perhaps again. You will observe, however, that I shall leave a considerable interval between each

blister. I shall not apply first one on the side, then one on the scapular, then one beneath the collar-bone, stroke upon stroke, one as fast as the other comes off. This is not an uncommon practice, and the object of it is to save time, to get the two or three blisters which have to be put on over as soon as possible. I do not myself adopt it, and I will tell you why, as the reasons give a very good example of the restorative system of medicine which is intended to be taught in this course of lectures.

The action of vesicants is first to destroy the epidermis, and to cause the exudation of a fibrinous serum beneath it. Very probably a similar but more remote effect is produced on the neighboring tissue of the pleural sac. But it is not at this stage of the process that the chief benefit occurs. If you watch carefully the line of dulness marking the upper margin of the collection of fluid in the chest, you will find that it falls—not when the blistered skin is full of liquid, and is discharging serum—not when the counter-irritation may be concluded to be at its height—but after it is all over. As the sore heals, then the level goes down with the greatest quickness. That is to say, that the true use of blisters in such cases is to start a healing process, a renewed life, on the outside skin, in order that it may be propagated to the neighboring viscus inside. As long as this healing influence continues to be exerted, you would gain no time by a recommencement of the process, and your too hurried repetition of blister would add to the patient's distress, without conducing to his cure. Wait, then, till the effect of one blister has quite gone off before you order another.

While the march of death is so hasty, let there be no delay in your remedies. Apply your cupping, or leeching, or *faute de mieux* venesection, your bleeding and your poultices, your slops and your diuretics, without losing a minute. Do not hesitate, and trust patients to Nature, in any disease; but least of all in acute pleurisy.

On the Value of Urinary Analysis in the Diagnosis and Treatment of Hepatic Disease. By GEORGE HARLEY, M. D., Professor in University College, London.

In his paper before the British Medical Association, the author began by saying that, as the practice of medicine is simplified in direct proportion as our means of "physical diagnosis" increase, he was glad of having the opportunity of calling attention to the fact that a knowledge of the condition of the urine is of as great assistance in the diagnosis of affections of the liver as of those of the kidney. Hitherto, the only physical means we possessed of detecting and distinguishing the various forms of hepatic disease did not extend beyond the knowledge of the position and size of the liver by percussion, the absence of bile from the stools by inspection, and the presence of biliary pigment in the urine by the application of nitric acid to that secretion. Everyone, however, must have met with cases of obscure hepatic disease where these means of research proved totally inadequate to their requirements. This circumstance has led several practitioners to seek for further aids to diagnosis in such cases; and consequently, at various times during the last few years, valuable suggestions have fallen from different members of the profession both here and abroad. For example, Dr. Eiselt, of Prague, has called attention to the fact that in cases of melanotic cancer of the liver, the true nature of the affection may be sometimes discovered during life by the presence of melanine in the patient's urine. Urine containing melanine, the author said, although of the normal color when first

passed, gradually becomes of a dark hue, even as dark as porter, when left for some hours exposed to the air. This change appears to be the result of a slow oxidation of the pigment. In the second place, Frerichs, in his admirable treatise on Diseases of the Liver, states that two substances, tyrocine, and leucine, which were formerly only known to the scientific chemist, are invariably to be found in the urine of patients laboring under acute or yellow atrophy of the liver. Dr. Harley said he had been able to verify this statement in the urine of a young married woman who died from this most fatal form of disease. Dr. Wilkes, he stated, had brought the case under the notice of the Pathological Society, and a report of it would be found in the "Transactions." Dr. Harley mentioned an interesting case of chronic atrophy of the liver, the result of obstruction from disease of the pancreas, in the urine of which he found both tyrocine and leucine. He had seen the gentleman several times along with Mr. Prancee, and they noticed that as the disease advanced the quantity of the abnormal ingredients increased. After death, crystals of tyrocine were found in the liver. Dr. Harley recommended that in all cases of obscure hepatic disease these substances should be looked for; and said that in the majority of cases they were readily detected in the concentrated urine by means of the microscope. The tyrosine appears as needles and little stars; the leucine as round yellow balls, some of which are occasionally spiculated.

The author next proceeded to direct attention to the method he had recently laid before the profession of distinguishing between jaundice arising from suppression and jaundice the result of obstruction—two forms of disease so ably described by Dr. Budd. As the treatment of jaundice from suppression ought to be very different from that adopted in jaundice from obstruction, it is of essential importance to be able to distinguish the one from the other. After alluding to the great differences of opinion that have hitherto existed regarding the presence of the biliary acids in the renal secretions in cases of hepatic disease, the author pointed out how the discrepancies arose from the fact that sufficient attention had not been paid to the kind of jaundice under which the patient labored. He said he believed that when bile acids occurred in the urine in any quantity, their presence might be regarded as a certain sign of the existence of some obstruction in the course or at the termination of the common bile duct. Dr. Harley then proceeded to demonstrate, by experiment, how easy it is to detect the bile acids in the urine by means of strong sulphuric acid and a small piece of white sugar. The sulphuric acid was so added as not to mix with the urine; the sugar floated at their line of contact, and after some minutes assumed a purple hue. In the urine containing no bile acid the sugar was simply browned.

Dr. Thudichum said the author had ascribed the doctrine he had propounded to Professor Frerichs. He, however, only watched the patients clinically; it was another physiologist who made the examinations, and discovered tyrocine and leucine. The disease in question was dogmatically termed atrophy, but he (Dr. Thudichum) as dogmatically objected to that term, for he had seen cases where the liver was certainly enlarged about one-third its ordinary size; and in one case, brought under his notice by Dr. Richardson, it was doubled in size. In some cases, so far from the liver being atrophied, it was hypertrophied. An excellent test was to put a drachm of the solution of the nitrate of mercury to the urine; the urine being then boiled, the white precipitate produced would be transformed into a dark purple color, and the solution itself would assume a partly purple color.

On Extraction of Soft Cataract by Suction. By T. PRIDGIN TEALE, JR., Surgeon to the Leed's General Infirmary.

During the autumn of last year I was led to inquire whether the principle of suction might not be made use of in withdrawing from the eye through a small wound all such cataracts, whether a traumatic or spontaneous, as have neither a hard nucleus from old age nor have undergone calcareous degeneration. This inquiry was suggested to me by the difficulty sometimes met with in certain cases of "linear extraction," in which the soft matter is removed either incompletely or only after prolonged and repeated introduction of the curette. I believed, moreover, that if the posterior capsule could be thoroughly cleansed from all opaque matter, without undue violence to the eye, there would be much less risk of inflammatory mischief after linear extraction, and that one of the chief sources of opacity of the posterior capsule would be removed. Having therefore satisfied myself by experiment that the softer portions of even a healthy lens, could be sucked through a fine tube, I requested M. Weiss to make for me a suction instrument which, being modeled upon the ordinary curette, I named a "suction curette."

As I have now had many opportunities of testing the value of extraction by suction, and as since my introduction, or rather, as it proves, revival of the principle, it is being extensively adopted in ophthalmic practice, I venture to offer the following remarks on the mode of performing the operation, and other points of interest connected with it:

Details of the Operation.—The operation by suction which I have adopted, is founded upon, and is essentially a modification of "linear extraction," the principles of which have been worked out by Mr. Bowman, and have been clearly and fully described by Mr. Critchett and Mr. Geo. Lawson.

First Stage.—*The efficient Rupture of the Anterior Capsule*—The pupil having been dilated by atropine, and the eye-lids fixed by the stop-wire speculum, the anterior capsule of the lens should be very freely torn open by two needles passed through the cornea from opposite sides. In carrying out this step the surgeon should bear in mind that its object is not merely to liberate the cataract, but also to insure such a tearing up of the anterior capsule that it may curl back from the area of the pupil and be lodged behind the iris. At the same time, he ought, by all means, to avoid injuring the posterior capsule—a caution to be especially remembered in cases where the cataract is dwarfed and the anterior capsule tough, or when, in traumatic cataract, the lens has been much reduced in bulk by absorption. If the operator wishes to avoid the use of the two needles, he may rupture the capsule at a later stage by introducing through the corneal opening made for the curette the hook used in extraction of hard cataract. The two needles, however give more perfect command over this important step in the operation.

Second Stage.—*The Opening in the Cornea.*—Having withdrawn one needle, and steadying the eye by means of the other, the operator should next make an opening in the cornea for the admission of the tubular curette of the suction instrument. For this purpose, a broad needle has been made for me by M. Weiss, of such a breadth as to make an opening of the exact size required for the curette.—The needle should enter the cornea opposite the margin of the pupil when fully dilated, and passing somewhat obliquely through the laminae of the cornea, should make a valvular opening, in order, firstly, that it may not be too central and leave a scar in front of the pupil; secondly, that it may not be too near the attacked margin of the iris, and thus favour its prolapse and adhesion to the wound and thirdly, that the curette, when introduced, may not rest upon nor bruise the iris.

Third Stage.—*The Removal of the Cataract by Suction*—Having

carefully introduced the curette, (if it hitches in traversing the corneal wound, it may easily be disengaged by being turned edgewise,) the surgeon should hold the open end of the tube steadily within the area of the pupil, gently burying it in the opaque material. The suction power may then be applied and regulated in degree as the opaque matter runs off in the tube. As soon as the pupil is clear, the curette may be carefully depressed towards the posterior capsule, in order to ascertain whether any opaque matter remains, but it should not on any account be swept before or behind the iris. If the suction be continued after the opaque matter has been removed, the cornea is drawn down over the open end of the curette and blocks it up, thus preventing the iris from being sucked into the instrument and injured.

If the operation has been efficiently performed, it will be found that the cataract has been completely withdrawn from the eye through an opening in the cornea no larger than would admit the common curette, without any injury to the iris, without rupture of the posterior capsule, and with such complete division of the anterior capsule that it has disappeared completely behind the iris.—It will be found, I think, in the majority of such cases, that recovery is most speedy, that the operation is followed by little or no irritation of the eye, that the patient on the eighth or tenth day can read No. 1, (Jager,) and that the conditions which usually produce opacity of the capsule have been provided against.

The foregoing rules apply to a simple case of complete soft cataract. They are also applicable, with slight modification, to cases of traumatic cataract of recent occurrence. In these cases, however, it is necessary, in the first place, to be very careful to tear open completely the anterior capsule which may have been previously ruptured in the accident producing the cataract; and in the second place, to bear in mind that the posterior capsule may also have been torn through. Should this have occurred, the suction operation will be complicated by the admission into the anterior parts of the eye of the vitreous humour, which would tend to pass through the tube more readily than the denser material of the cataract. When such a defect occurs, it is sometimes possible, by careful management of the curette, to withdraw the opaque lens, without, at the same time, drawing off a serious amount of vitreous humour.

Another complication may arise, namely—partial cataract, in which the nuclear portions of the cataract are opaque, and the cortical portions are healthy, tenaceous, and adherent to the capsule. This difficulty must be met in the same way as in "linear extraction," by the preliminary operation of puncturing the anterior capsule so as to admit the aqueous humour into the structure of the lens, and so to cause its disintegration. It may be possible to withdraw by suction even a partially sound lens without the preliminary disintegration; but I have not yet attempted to do so, not from any difficulty in drawing such healthy lens through the tubular curette, but because when the peripheral parts of the lens are transparent and adhere to the capsule, it is hardly possible to ascertain when the capsule has been completely cleansed from lenticular matter.

Another class of cases presenting difficulties is that in which a soft cataract has become wasted and calcareous, or partly so. In such cases the solid portions will not pass along the tube of the curette.

On former attempts to extract Cataracts by Suction, and their failure.—When I first devised the suction-curette, I was under the impression that I had hit upon a new idea, and that the proposal was original. By the kindness of several friends, however, I have been directed to accounts of various previous attempts to apply the same principle to the extraction of cataract.

The Persians, years ago, are said by Avicenna to have sucked out cataracts through a hollow needle. How far they succeeded I am not able to state.

In 1847, M. Langier invented his "aiguille a pompe," a hollow needle fixed in a syringe, apparently like that now in use for subcutaneous injection. Its use is discussed by M. Desmarres. The needle having been thrust through the sclerotica, vitreous humour, and posterior capsule, and lodged in the centre of the lens, the suction was applied by means of the syringe in the handle of the instrument. If the cataract was fluid, it was drawn into the instrument, the pupil became clear, and sight was immediately restored. If the cataract were not fluid, ("et la cataracte est rare,") the vitreous humour was drawn out, the cataract was left *in situ*, and the eye collapsed. This misadventure was followed by internal inflammation of the eye, and in consequence, the operation was condemned. "En resume, l'operation de la cataracte par succion est abandonnée." Failure in this operation was to be expected from using the needle of the syringe as the piercing instrument, and from traversing the sclerotica and rupturing the posterior capsule, which ought to have been preserved as the barrier between the cataract and vitreous humour.

Again, M. Blanchet brought forward another method of extracting cataract by suction. Having dilated the pupil, he made an opening in the cornea with a broad needle, through which he introduced a small tube with a flageolet-like mouth attached to an Anell's syringe. With this blunt tube he pierced the capsule of the lens; and if the cataract proved soft, he pumped it out through the tube by working the piston of the syringe. The main defects of this plan of M. Blanchet, were—first, the attempt to puncture the anterior capsule with a blunt instrument, thereby using unnecessary force in reaching the cataract; and secondly, the imperfect opening of the anterior capsule, whereby the capsule remained in the area of the pupil, and becoming opaque, rendered a secondary operation necessary.

On Suction Instruments.—The original suction instrument which M. Weiss made for me consisted simply of a tubular curette fixed in a handle, to which a small india-rubber tube with a mouth-piece is attached. The flexible tube is of such a length as to reach from the mouth of the operator to the curette when held in the eye.

Shortly afterwards, M. Weiss made, at the suggestion of Mr. Bowman, a modification of this instrument, in which the suction power is applied by an ingenious mechanism in the handle, so that the hand which holds the curette controls the suction. Mr. Bowman, also, inserted a piece of glass tube between the curette and the handle, to enable the operator to watch the result of the suction.

A third instrument has been suggested and made for me by M. Weiss, which is simply a light glass tube with the tubular curette fixed at one end, and the flexible tube with the mouth-piece, at the other end.

A fourth instrument has been made for Dr. Badu, of Guy's hospital, by Khroné, of Whitechappel, and is thus described by Mr. Lawson: "The suction-power is a small, hollow, india-rubber ball, placed at the extremity of a tube which terminates in a glass tubular curette. Pressure is made on the ball with the hand to expel the air from the tube, and its re-admission is regulated by a well-contrived stop apparatus placed close to the curette. After the air from the ball has been expelled and its re-admission prevented by closing the stop the curette is introduced into the eye, and the amount of suction is regulated by a little trigger connected with the stop apparatus within."

Having used the first three forms of the instrument, I have found them to do their work perfectly; and I have no doubt that Dr. Badu's is at least equal to them. On the whole, perhaps from having used it more frequently, I prefer the original curette, (with the addition of the glass tube,) as the suction is more immediately at command when applied by the mouth, and the instrument can be guided with greater delicacy when the hand is not fettered by applying the suction power.

[Dr. Teale reports seven cases operated on by this method. The details are omitted; but they were all successful, and unfollowed, except in an instance—that of a scrofulous child—by any serious inflammation]

On Glaucomatous Affections and their Treatment by Iridectomy. By W. BOWMAN, ESQ., F. R. S.

Before the British Medical Association, the author, after eloquently calling attention to the vast revolution which had been worked in the diagnosis and treatment of diseases of the eye since the invention of the ophthalmoscope, by Helmholtz, passed on to the consideration of the treatment of glaucoma by iridectomy. He most warmly eulogized Von Graefe for having discovered a cure for a disease which but six or seven years ago was deemed incurable, and for having enriched the literature of the profession by his admirable papers on glaucoma, &c. Mr. Bowman then proceeded to give a masterly *expose* of the different symptoms of glaucoma in its different stages, viz:—the premonitory, acute, subacute, and chronic, and laid particular stress upon the increase of tension or hardness of the eye-ball—a symptom which he considers of paramount importance in all intraocular affections, and one which demands close and anxious watching. He also pointed out the fact noticed by Von Graefe, that a glaucomatous condition of the eye may supervene upon other affections of the eye, or after operation for cataract. The treatment required in such cases is an early iridectomy. He strongly urged the necessity of all medical men making themselves conversant with the various symptoms of glaucoma, in order that by a timely iridectomy eyes might be saved which were now irretrievably lost from the fact that the time had passed by when an iridectomy would have produced any improvement of sight. How often had we not to pass the melancholy verdict—"Too late! had you applied sooner your eye-sight might have been saved." Mr. Bowman vindicated the efficacy of iridectomy as a cure for glaucoma, having himself had many brilliant results of this operation. In conclusion, he explained the method of performing the different steps of the operation, the plan of incision, &c.

Dr. Richardson said he had been of late trying to work out the synthesis of glaucoma in the same way as the synthesis of cataract, by the increase of the specific gravity of the blood. He should be glad to know if Mr. Bowman could tell, with absolute precision, what was the source of the fluid that produced the tension, and the nature of it; the source from which it was derived, and in what part of the eye-ball the tension existed; also, if he could explain physiologically the action of iridectomy. He had seen cases with such extraordinary results, that it was difficult to know how the operation really acted. He believed Mr. Bowman had somewhat under-estimated the blood conditions leading to glaucoma. It was necessary to consider that there was a gouty, or rheumatic, or super-fibrinized state of the blood, but a change simply in the specific gravity of the blood. By reducing the specific gravity of the blood, conditions were produced analogous to those occurring in glaucoma; so that, as cataract often depended upon an increase of specific gravity, the opposite effect might be produced by the opposite condition of the blood. He should be glad to know if Mr. Bowman had ever seen glaucoma in diabetes; for, therapeutically, the two diseases seemed incompatible.

Mr. Wells said he had seen the operation performed by its originator, Von Graefe, and could endorse all that Mr. Bowman had said respecting it. The reason why it had not been successful in some cases, were, that they had not been properly diagnosed; that the operation was not performed sufficiently early; or, that the mode of operation was not what it should have been—the incision not being made through the sclerotic.

Mr. Bowman said he came as a practitioner to speak to practitioners, and had therefore avoided going into anything like abstract or physiological reasoning. In one case he had seen the connection referred to by Dr. Richardson; but in that case there was a large amount of sugar, and the specific gravity was not higher than 1025. It was a case of chronic glaucoma—the sight of one eye was entirely gone and but little remained in the other. He performed the operation of iridectomy, and nothing could be more satisfactory than the recovery of the patient. With regard to the blood conditions, there might be varied morbid conditions of the blood not marked by albuminuria, or by anything gouty, rheumatic, or diabetic in the system. There was much more to be discovered on the subject by future observers, and there might be states of blood found to be intimately connected with glaucoma; but he thought the symptoms were rather referable to a local condition of the blood vessels and the nervous coats of the blood vessels in the eye. With regard to the *rationale* of the operation, he followed his friend Von Graefe. He at first thought that the result was produced by opening a freer communication between the back and front of the iris, thus allowing the fluids from behind to percolate more freely into the aqueous humour. He was not prepared to agree with Von Graefe's early supposition, that it might depend upon a removal of a portion of the iris, the iris being considered as the secreting agent of the aqueous humour, and that thus there might be a diminished secretion of the aqueous humour in the eye. He did not think it depended upon the quantity of iris removed; but upon the exactitude with which the marginal part of the iris was turned away from the ciliary bodies. With regard to the cause of the tension, he believed that in chronic cases it was an enlargement of the vitreous chamber of the eye, and in many cases a partial consolidation of the substance of the vitreous humour, not necessarily connected with any serum, or fibrous, or cloudy flocculi.

Employment of Glycerine in the Treatment of Diseases of the Eye. By W. ABBOTTS SMITH, M. D.

Notwithstanding that glycerine is largely used as a bland, emollient application to the skin, in several affections of that delicate membrane, its importance as a remedial agent in certain diseases of the conjunctiva, appears to be considerably underrated, although several marked points of analogy exist between the two structures.

Having been induced some time since by the perusal of a paper published in the *Bulletin de Therapeutique*, by M. Foucher, upon this subject, I have given a fair trial to the topical employment of glycerine, and the results have been such as to warrant me in recommending its use in some of the forms of ophthalmia, and other superficial affections of the eye.

The application of *pure* glycerine, uncombined, is decidedly advantageous for the prevention and removal of the hard crusts produced by irritation which are occasionally closely adherent to the eye-lids in ophthalmia, which disorder they consequently tend to perpetuate.

In ectropion, and in cases of partial loss of the eye-lashes, glycerine forms an agreeable and efficient application; and it will also be found similarly useful in epiphora, and in any other superficial diseases of the eye which are dependent upon diminished secretion by the Meibomian glands. Among these may be especial mention of the peculiar condition of the conjunctiva to which Von Ammon gave the name of Xerosis Conjunctivæ, in reference to the dry, cuticular appearance of the eye-ball, and which is most commonly met with in persons of scrofulous diathesis, who have long suffered from chronic ophthalmia. The free play of the eye-lids upon the front surface of the eye-ball is preserved by the topical employment of the glycerine; and the tendency to symblepharon, or to

an uncomfortable temporary adhesion of the eyelids, which occurs after sleep, is counteracted.

Unctuous applications are always preferable to watery solutions in ophthalmia, both because they are not so readily washed away by the tears, and because they more closely resemble the natural greasy secretion of the Meibomian glands, by which the conjunctival surface is lubricated in the healthy state; and the circumstance that glycerine alone, when employed locally, is highly beneficial in the ophthalmic affections already referred to, also points to that substance as a valuable vehicle in the preparation of collyria.

M. Foucher enumerates, in his paper in the *Bulletin de Therapeutique*, a long list of medicaments with which he has combined glycerine in the treatment of ophthalmia in numerous cases which had come under his care at the Hopital de Enfants. The substances which I have found to be most usefully employed in this form are the sulphate of zinc, the sulphate of copper, and laudanum; but M. Foucher also combines glycerine with the perchloride of iron, with borax, with tincture of iodine, and other agents.

It should be here stated that the nitrate of silver, owing to the chemical action which ensues upon its coming in contact with organic matter, cannot be used conjointly with glycerine; and it further remains to be mentioned that the glycerine should be well purified, in which condition it is perfectly natural, does not possess any odor or taste, and does not produce irritation when it is applied to the eye.

The Submaxillary Ganglion.

M. Claude Bernard, in a late communication to the Academy of Sciences, treated of the special function of the submaxillary ganglion. The results of his experiments prove that the tongue is connected with the submaxillary gland by two kinds of nervous arcs, which are, in a measure, concentric; the one of the greatest extent passing through the brain, the other, far shorter, passing through the submaxillary ganglion. These results from these two nervous connections two kinds of reflex action destined to affect the submaxillary gland. The first, which traverses the brain, is *intelligent*, and is excited more particularly by the gustatory faculty of the tongue; the second, which is unintelligent, is transmitted by the submaxillary ganglion, and seems to be provoked more especially by the dry or moist condition of the buccal-lingual mucous membrane. The submaxillary ganglion not only possesses the faculty of developing reflex action, which may, by its mediation, reach the gland without passing through the encephalic centre, but it also exerts a special influence upon the intermittent character of the salivary secretion. Everyone is aware of the fact, that the flow of the saliva takes place in an intermittent form, and that only when an exciting cause, reflex or direct, calls forth the activity of the gland, and that the secretion ceases when the exciting cause is withdrawn. M. Bernard has observed that after the section of the submaxillary ganglion, the lingual and chorda tympani nerves still remaining intact, the secretion of the submaxillary gland becomes continuous, although it may be augmented by the application of strong-tasted stimulants to the surface of the tongue. Another fact of interest brought to light by the same experiment is, that when separated from the encephalic centre, the ganglion after a certain time loses its controlling influence over the secretive powers of the gland, which instead of ceasing its function, remains in a condition of permanent activity.—From which it results that the submaxillary ganglion is at one and the same time independent of, and subordinate to, the encephalic centre.

Arsenic and Quinine in Intermittent.—Lecturing on the subject of intermittent fever, Dr. Ward, Physician to the Dreadnought Hospital, says: "I have fairly tried the liquor potassæ arsenitis against the quinine, in doses as full and frequently repeated as I dared to venture upon, and have continued it until irritation of the intestinal mucous coat rendered desistance imperative; but have not succeeded in checking the paroxysms as with quinine.—Some physicians, admitting the greater efficacy of quinine in arresting the paroxysms, have claimed for arsenic, and also for strychnia, greater power in preventing a relapse. I believe, however, that quinine is quite effective for this purpose if continued in small doses for a considerable time, and also that it is the best prophylactic against the disease. A captain, who consulted me a year or two back, said that he was on the point of sailing for Jamaica, and that he had never been there without contracting severe ague. I recommended him to take quinine, in small doses, two or three times a day, all the way out. He did so; and on his return to England reported that for the first time he had enjoyed immunity from the disease.

Supplementary System of Nutrient Arteries for the Lungs.—At the last meeting of the British Scientific Association, Dr. Turner read a paper in relation to this subject. An arterial plexus was described on the side of the pericardium beneath the mediastinal pleura. It was formed by the junction of the pericardiac, mediastinal, and phrenic branches of the internal mammary artery with each other, and with numerous fine branches from the trunks of the intercostal arteries. From it a number of slender thread-like arteries passed to the lung, some in front of its root, others behind, and others between the layers of the ligamentum latum pulmonis. Some of these arteries were distributed in the substance of the lung, others on its surface beneath the pulmonary pleura. Through the agency of this plexus an arterial communication is established between the bloodvessels of the lung and the arteries which supply the wall of the chest with blood.

Prolapsus of the Rectum in Children.—With adults the excision of some of the anal folds or of a portion of the prolapsed mucous membrane may be of use; but M. Guersant, of Paris, has found that the actual cautery lightly applied round the anus was very successful. He burns four points close to the orifice in a square, one just by the coccyx, one opposite that process in front, and two others on either side. The action should reach as far as the sphincter; simple cold-water dressing is employed afterwards, and some of the little patients have recovered in a few days.

Rubidium.—The alkali metal discovered by M. B. Grandeau in the mineral waters by the spectrum analysis has been recently found by Grandeau in the ashes of beet-root, tobacco, coffee, tea and grapes. The spectrum of tobacco gave bands characteristic of lime, lithium, potassium and rubidium. These facts show that rubidium is one of the most widely diffused bodies in nature, since vegetables of the most diverse kinds are found to take it up from the soil. This opens a field of research in vegetable chemistry into which Mr. Grandeau proposes to enter.

Woman with Three Breasts.—Dr. Schofield Johnson reports the case of a woman, whom he attended in her second confinement, having three breasts—two well formed, and somewhat larger than usual. Immediately above the left mamma was a supernumerary breast, about two inches, and a half in diameter, full of milk, and with a well developed areola and nipple. When not suckling, this nipple resembles a mole, and lies flat, for which it was taken until pregnancy revealed its true character.—*Lancet.*

Winter Cherry.—The berries of this plant, (*Physalis Alkekengi*), cultivated in our gardens, have been successfully used by Dr. Saville, of London, in the treatment of obstinate gout. The berries are said to be most effective when allowed to ripen and begin to dry on the stem. From six to twelve berries, or an ounce of the expressed juice, may be taken for a dose; and much larger quantities are not injurious. They are consumed to a considerable extent in some parts of Europe as food. They are said to possess strong diuretic properties, and have been employed in suppression of urine, gravel and other complaints of the urinary passages.

Daturine.—M. Jobert de Lamballe has for some time past been employing, as a mydriatic, in his ophthalmic practice, and as a substitute for the various preparations of belladonna, a simple solution of daturine. The facts upon which he founds his preference for this drug are the following: Daturine is three times as strong as atropine and its salts, and may consequently be used in proportionately smaller doses. When introduced between the eyelids no pain is produced, neither is the vision dimmed, as when belladonna is employed. The effects produced are, moreover, more reliable and constant, as well as more durable.

Perchloride of Iron as a Hemostatic.—The *Antwerp Journal* states that perchloride of iron combined with collodion is a good hæmostatic in the case of wounds, the bite of leeches, &c. To prepare it, one part of crystallized perchloride of iron is mixed with six parts of collodion. The perchloride of iron should be added gradually and with care, otherwise such a quantity of heat will be generated as to cause the collodion to boil. The composition when well made is of a yellowish-red color, perfectly limpid, and produces on the skin a yellow pellicle, which retains great elasticity.

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